

ORIGINAL

NEW APPLICATION



0000152769

Application

for a

Certificate of Environmental Compatibility

L-00000XX-14-0120-00168

**SUN STREAMS
GEN-TIE PROJECT**

Arizona Corporation Commission
DOCKETED

APR - 4 2014

DOCKETED BY	<i>NR [Signature]</i>
-------------	-----------------------

Prepared for:
State of Arizona
Power Plant and Transmission Line Siting Committee

Submitted by:
Sun Streams, LLC

Date: April 4, 2014
Case No. _____

RECEIVED
2014 APR - 4 A 11: 15
AZ CORP COMMISSION
DOCKET CONTROL

BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE
SITING COMMITTEE

In the matter of the Application of Sun Streams, LLC, in conformance with the requirements of Arizona Revised Statutes 40-360.03 and 40-360.06, for a Certificate of Environmental Compatibility authorizing construction of the Sun Streams Gen-tie Project, a 34.5 / 500kV substation and 0.3-mile 500kV gen-tie line interconnecting a photovoltaic (PV) solar generating facility to the adjacent Hassayampa Switchyard in Maricopa County approximately 5 miles southeast of Wintersburg, approximately 11 miles southeast of Tonopah, approximately 5 miles west northwest of Arlington, and approximately 14 miles west of Buckeye, Arizona.

Docket No. L- _____

Case No. _____

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....ES-1

APPLICATION

1.0 Name and address of the applicant.....1

2.0 Name, address, and telephone number of applicant representative.....1

3.0 Date on which the applicant filed a Plan1
in compliance with ARS § 40-360.02

4.0 Description of Proposed Facility.....1

 a) Electric Generating Plant

 b) Electrical Interconnection

 c) Sun Streams Solar Facility

5.0 Areas of Jurisdiction.....6

6.0 Environmental Studies.....6

EXHIBITS

Exhibit A Location Map and Land Use Information.....A-1

Exhibit B Environmental Reports.....B-1

Exhibit C Areas of Biological Wealth.....C-1

Exhibit D Biological Resources.....D-1

Exhibit E Scenic Areas, Historic Sites and Structures, Archaeological Sites.....E-1

Exhibit F Recreational Purposes and Aspects.....F-1

Exhibit G Concepts of Typical Facilities.....G-1

Exhibit H Existing Plans.....H-1

Exhibit I Anticipated Noise/Interference with Communication Signals.....I-1

Exhibit J Special Factors.....J-1

LIST OF ACRONYMS

3D	3-Dimensional
AC	Alternating current
AGFD	Arizona Game and Fish Department
APLIC	Avian Power Line Interaction Committee
ASM	Arizona State Museum
AZDA	Arizona Department of Agriculture
BLM	Bureau of Land Management
CEC	Certificate of Environmental Compatibility
dB	Decibel
dBA	A-weighted decibel
DC	Direct current
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
FAA	Federal Aviation Administration
KOP	Key observation point
Leq	Equivalent sound pressure level
NPL	Arizona Native Plant Law
PADs	Planned Area Developments
PCS	Power conversion station
PEP	Project Evaluation Program
PV	Photovoltaic
ACEC	Areas of critical environmental concern
PVCS	Photovoltaic combining switchgear
ROW	Right-of-way
SHPO	State Historic Preservation Office
SRP	Salt River Project
SUP	Special Use Permit
USFWS	U.S. Fish and Wildlife Service
VC	Viewer Concern
VE	Viewer Exposure
VQ	Visual Quality
WSCA	Wildlife of Special Concern in Arizona

Executive Summary

EXECUTIVE SUMMARY

This Application is for a Certificate of Environmental Compatibility (“CEC”) authorizing construction of the Sun Streams Gen-tie Project, a 34.5 / 500kV substation and 0.3-mile 500kV gen-tie line (the “Project” or “Gen-tie Project”). This Project would interconnect the Sun Streams Solar Project, a proposed solar generating facility using photovoltaic (PV) technology (the “Solar Facility”), to the adjacent existing Hassayampa Switchyard.

The Applicant believes that it is beneficial to the State of Arizona to issue a CEC for this Project for the following reasons:

- The Gen-tie Project is needed in order to interconnect the Sun Streams PV Solar Facility to the regional grid, making more clean, renewable energy available to Arizona utilities and customers.
- The selected site is very suitable for the Gen-tie Project, being adjacent or near to multiple significant existing generation, transmission and substation facilities around the adjacent Hassayampa Switchyard.
- The Gen-tie Project is consistent with the land use and zoning designations for the lands on which it is proposed.
- The Gen-tie Project would not result in any significant environmental impacts.

Therefore, this Application is organized to address each environmental compatibility issue associated with the Project Substation and short Gen-tie Line associated with this Project.

The Project site is located in Maricopa County approximately 5 miles southeast of Wintersburg, approximately 11 miles southeast of Tonopah, approximately 5 miles west northwest of Arlington, and approximately 14 miles west of Buckeye, Arizona. (**Figure ES-1**). The Project Substation would occupy up to 5 acres and the Gen-tie Line would cross 0.3 miles of private land.

The Project location was selected for the following reasons:

- The Project site is located on private land adjacent to and surrounded by multiple other existing transmission and substation facilities.
- The Project Substation site is located adjacent to the transmission interconnection point (the existing Hassayampa Switchyard) minimizing the length of the gen-tie line (0.3 miles).
- The Project area is within a portion of unincorporated Maricopa County containing several existing power generation and transmission projects and designated for additional future industrial uses.

- The nearest existing residences are located approximately 1.7 miles from the Project location. There are no active residential developments and no new planned subdivisions near the Project site.
- No critical habitat will be affected by the Project and there will be no significant impacts to any threatened or endangered species.

The analyses for this Application also show that several critical elements of concern are not present or will not be affected by the siting, construction, or operation of the Project, including: wild and scenic rivers, areas of critical environmental concern (ACEC), or solid and hazardous waste.

The analyses also show that there will be no significant direct, indirect or cumulative adverse effects on land use, cultural resources, wilderness areas, biological resources, special interest wildlife and plant species, ground or surface water quality, earth and soil resources, air quality, or noise. No significant impacts to minority or low income populations are expected to occur.

There will be socioeconomic benefits derived from the Gen-tie Project. In the short-term, the construction work force can be expected to increase revenues in the retail and service sectors of the local and state economy. In the long-term, the available power interconnecting through the Gen-tie Project to the local electric transmission system will provide a more robust and reliable electric service system and will help meet the demand for clean, affordable, renewable energy as well as reduce the dependence on fossil fuels. The Gen-tie Project will require only a small number of operations and maintenance workers.

The Applicant therefore requests approval of this Application and submits that the Sun Streams Gen-tie Project and its location are environmentally compatible.



Figure ES-1
 Sun Streams Gen-tie Project
 Project Location

Application

**APPLICATION FOR
CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY**

APPLICATION

1. ***Name and address of the applicant, or in the case of a joint project, the applicants.***

Sun Streams, LLC
135 Main Street - 6th Floor
San Francisco, CA 94105

2. ***Name, address and telephone number of a representative of an applicant who has access to technical knowledge and background information concerning the application in question and who will be available to answer questions or furnish additional information.***

Mr. Max Bakker
First Solar
135 Main Street - 6th Floor
San Francisco, CA 94105
(415) 471-0375
Max.Bakker@FIRSTSOLAR.COM

With a copy to:
Ms. Beth Deane
First Solar
135 Main Street - 6th Floor
San Francisco, CA 94105

3. ***State each date on which applicant has filed a ten-year plan in compliance with A.R.S. § 40-360.02 and designate each such filing in which the facilities for which this application is made were described. If they have not been previously described in a ten-year plan, state the reasons therefor.***

The Applicant filed a ten-year plan for the subject transmission line and associated substation facility in compliance with ARS 40-360.02 on February 21, 2013.

4. ***Description of the proposed facility, including:***

4.a. ***With respect to an electric generation plant:***

Not applicable, as the proposed facility does not constitute a plant.

4.b. With respect to a proposed transmission line:

4.b.i. Nominal voltage for which the line is designed; description of the proposed structures and switchyards or substations associated therewith; and purpose for constructing said transmission line.

- The nominal voltage of the proposed Sun Streams Gen-tie Project (the “Project” or “Gen-tie Project”) interconnection is 500kV. The electrical one-line diagram of the proposed on-site substation and the adjacent Hassayampa Switchyard are shown on **Figures 4-1 and 4-2** respectively.
- The proposed structures associated with the Project consist of a new 34.5 / 500kV substation (the “Project Substation”) and a short, 0.3 mile 500kV gen-tie line (the “Gen-tie Line”) originating at the Project Substation and interconnecting the Project with the adjacent existing Hassayampa Switchyard. The approximately 5-acre site for the Project Substation will be entirely fenced for security with chain link fence topped with barbed wire, at a total height of approximately 8 feet. **Figure 4-3** shows the conceptual layout of the Project Substation. Salt River Project (“SRP”) is responsible for the operation and maintenance of the Hassayampa Switchyard.
- The purpose for constructing the transmission line is to interconnect a proposed photovoltaic solar generating facility known as the Sun Streams Solar Project (the “Solar Facility”) with the regional transmission grid by way of the Hassayampa Switchyard. For informational purposes and to provide context for the CEC-jurisdictional 500 kV interconnection facilities (Project) that are the subject of this Application, a brief summary of the non-jurisdictional proposed Solar Facility is presented in **Paragraph 4.c.** below.

4.b.ii. Description of geographical points between which the transmission line will run, the straight-line distance between such points and the length of the transmission line for each alternative route for which application is made.

- The Gen-tie Line will originate on the dead-end structure within the Project Substation and terminate on the dead-end structure within the existing 500kV Hassayampa Switchyard. Specifically, within the Hassayampa Switchyard, the termination point for the Gen-tie Line will be the existing east line dead-end structure at Bay 4 (see **Figure 4-2**).

- The straight line distance of the Gen-tie line will be approximately 0.3 miles.
- There are no alternative routes proposed for the Gen-tie Line.

4.b.iii. Nominal Width of right-of-way required, nominal length of spans, maximum height of supporting structures and minimum height of conductor above ground.

- The right-of-way required for the Gen-tie Line between the Project Substation and the Hassayampa Switchyard will be up to 130 feet wide.
- The Gen-tie Line will be comprised of three spans between the Project Substation and the Hassayampa Switchyard. Each span will cover approximately 400 to 800 feet.
- The Gen-tie Line will require three new support structures, as follows:

One (1) tubular steel A-Frame end structure less than 120 feet tall located inside the Project Substation; and

Two (2) single-circuit, three-phase, steel lattice structures up to 170 feet tall, the first located between the Project Substation and the Hassayampa Switchyard, and the second located inside the fence-line of the Hassayampa Switchyard.

The Gen-tie Line will then connect to the existing end structure at Bay 4 inside the Hassayampa Switchyard.

- The Gen-tie Line will be designed to maintain 500kV phase-phase, phase-ground clearances per all applicable codes and standards.

4.b.iv. To the extent available, the estimated costs of the proposed transmission line and route, stated separately. (If application contains alternative routes, furnish an estimate for each route and a brief description of the reasons for any variations in such estimates.)

The presently estimated cost for the Gen-tie Line and Project Substation is \$12,410,000. There are no alternative routes proposed.

4.b.v. Description of proposed route and switchyard locations. (If application contains alternative routes, list routes in order of applicant's preference with a summary of reasons for such order of preference and any changes such alternative routes would require in the plans reflected in (i) through (iv) hereof.)

The Project is located in the NW1/4 of Section 14, T 1 S, R 6 W, G&SRB&M, in Maricopa County, approximately 5 miles southeast of Wintersburg, approximately 11 miles southeast of Tonopah, approximately 5 miles west-northwest of Arlington, and approximately 14 miles west of Buckeye, Arizona (see **Figure 4-4**). The proposed route for the Gen-tie Line will originate at the Project Substation and interconnect with the existing Hassayampa Switchyard, as shown on **Figure 4-5**. The Project Substation will be located 0.3 miles east of the Hassayampa Switchyard, both of which are immediately south of Elliot Road.

4.b.vi. For each alternative route for which application is made, list the ownership percentages of land traversed by the entire route (federal, state, Indian, private, etc.).

The Gen-tie Line will cross land controlled by the Applicant and SRP. Approximately 8 percent of the lands crossed by the Gen-tie Line will be owned by the Applicant (within the Project Substation) and the remainder, 92 percent, is land owned by SRP, *et al.*, and managed by SRP.

4.c. Sun Streams Solar Facility

As indicated above, the following information generally describes the proposed Sun Streams Solar Facility to provide context for the electrical interconnection facilities that are the subject of this Application.

The Sun Streams Solar Facility is a photovoltaic (PV) solar energy generating facility proposed to be constructed on approximately 2,155 acres of private and State lands in unincorporated Maricopa County, generally located north and east of the Gen-tie Line and the Project Substation.

A Special Use Permit (SUP) was originally approved for the Solar Facility by the Maricopa County Board of Supervisors in 2011, allowing the development of the facility on an approximate 1,070 acre portion of the site located at the northwest corner of 355th Avenue and Elliot Road. Currently, an Amendment to this SUP is being processed by Maricopa County to allow the expanded development of the Solar Facility onto an additional 1,085 acres adjoining the currently entitled area of the site.

The Sun Streams Solar Facility includes the following:

- A solar field of PV modules mounted on a single-axis tracking system;
- Electrical collection systems, including photovoltaic combining switchgear, power conversion stations, inverters and transformers;
- Up to two utility / operation and maintenance buildings;
- Up to two maintenance / laydown areas; and,
- Civil infrastructure, including access gates, driveways, on-site parking, drainage channels, storm-water retention basins, fences, signage, motion activated security lighting and cameras, and up to two septic tanks and leach fields.

See **Figure 4-6** for the site plan for the overall solar project.

The solar field will consist of arrays of thin-film PV modules mounted on single-axis trackers that will track the sun throughout the day. The panels are mounted in north-south rows that rotate east-to-west to follow the sun.

The arrays of PV panels will be organized into approximately 1 to 2 MW blocks that will each include more than 20,000 PV panels. Each block will contain a power conversion station (PCS) consisting of up to two static power inverters, one inverter step-up transformer, cabling systems, and grounding systems. The PCS may be within prefabricated metal or pre-cast concrete enclosures, under shade structures, or have no enclosures. The electrical equipment within the PCS prepares the solar power to be transmitted by the existing electrical grid. The inverters convert the low voltage direct current (DC) electricity generated by the panels to alternating current (AC) electricity. The inverter step-up transformers then step up the voltage of the AC electricity to 34.5 kV.

From the transformers, the electricity is routed through underground cabling from each PCS to a photovoltaic combining switchgear (PVCS) site. Equipment in the PVCS will be mounted to a concrete foundation and will be metal enclosed or open. From the inverters and PVCS, the power at 34.5 kV will be routed to the on-site Project Substation.

When operational, the Solar Facility will require a total of four to six full-time , on-site employees. PV solar energy generating facilities require a limited amount of maintenance. Employee activities could include periodic inspections, PV panel maintenance, dust control, weed control, maintaining electrical collection system components, and maintaining on-site infrastructure, e.g., driveways, drainage channels and retention basins.

Once constructed, the Solar Facility will have only nominal water use for employee sanitation purposes in the operations facilities, which will be supplied from a new exempt well. Construction water for dust control, etc., is anticipated to be leased from local third-party groundwater wells, pursuant to a General Industrial Use Permit.

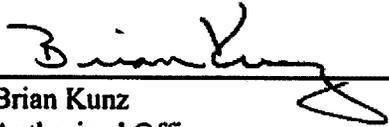
To provide a secure and safe environment, the Solar Facility will be enclosed by a chain link fence topped with barbed wire (approximately 8 feet in total height) and all access points will be gated. The Project Substation will also be separately fenced with similar fencing. All security lights will be directed downward and into the Solar Facility and all on-site lighting will comply with Maricopa County zoning requirements.

5. ***List the Areas of Jurisdiction [as defined in A.R.S. § 40-360(1)] affected by each alternative site or route and designate those proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans or any such areas of jurisdiction.***

The Sun Streams Gen-tie Project is located on private lands in an unincorporated portion of Maricopa County. The proposed Gen-tie Project is not contrary to any zoning ordinances or comprehensive plans of Maricopa County as described in **Exhibit A**.

6. ***Describe any environmental studies applicant has performed or caused to be performed in connection with this application or intends to perform or cause to be performed in such connection, including the contemplated date of completion.***

The Applicant has conducted studies to evaluate potential impacts associated with the Project on land use, biological resources, cultural and historical resources, visual resources, recreation, noise / communication signals, and existing plans in the area. The results of these analyses are included in the Exhibits to this Application.

By: 

Brian Kunz
Authorized Officer

ORIGINAL and 25 copies of the foregoing hand delivered and filed with the Director of Utilities, Arizona Corporation Commission, this 4th day of April, 2014.

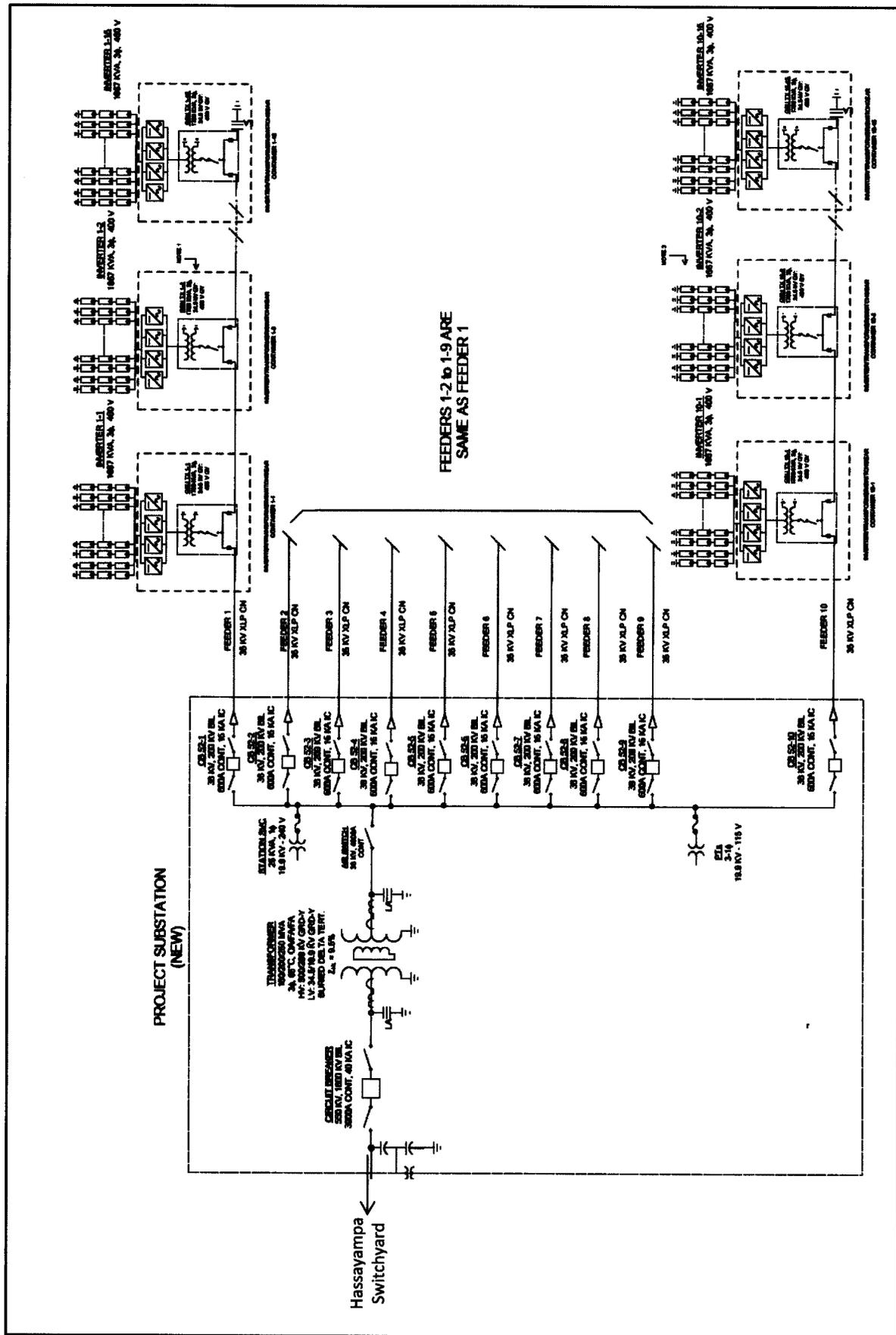


Figure 4-1
 Project Substation Electrical One-Line Diagram

HASSAYAMPA

500KV
BAYS 1-11

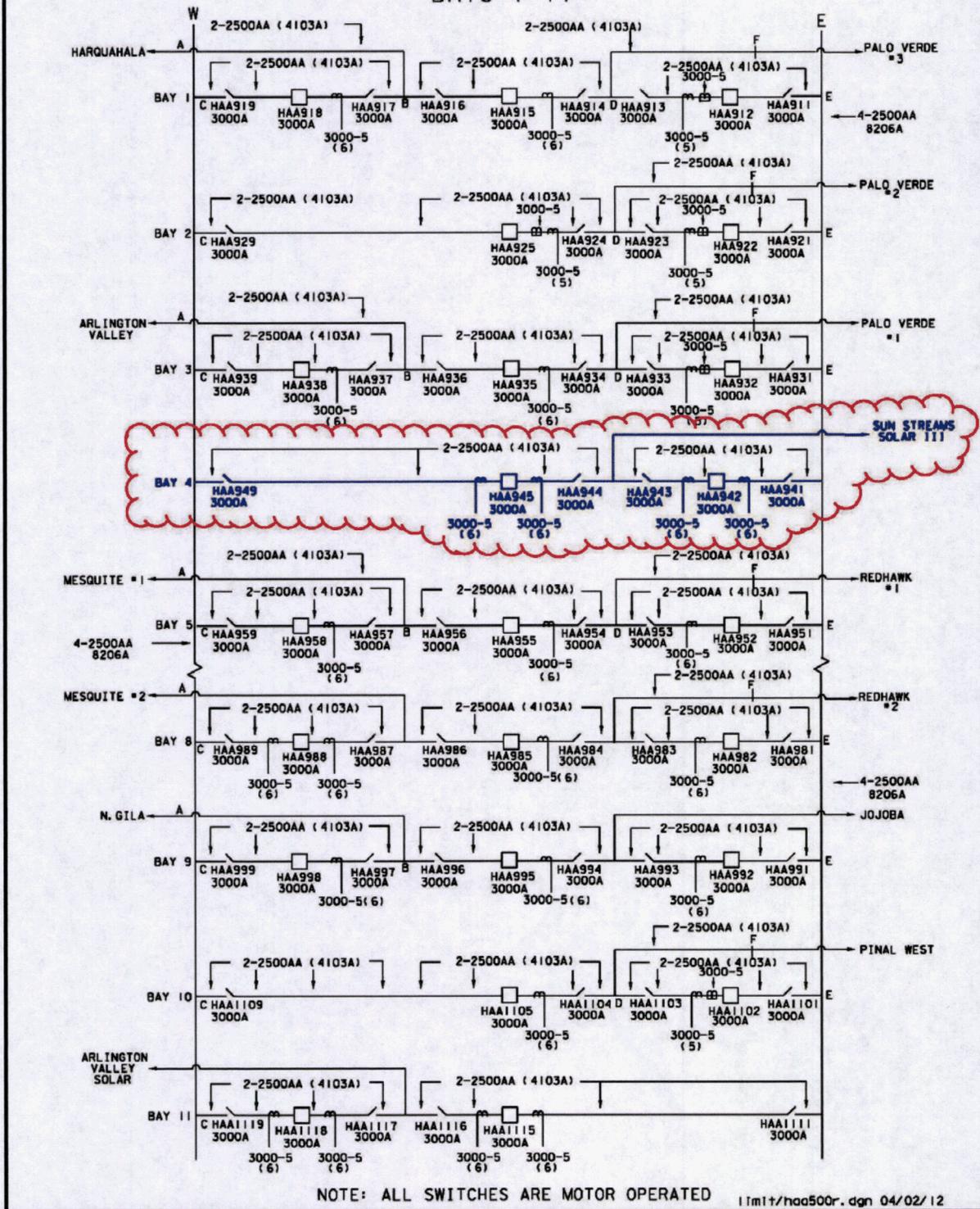


Figure 4-2

Hassayampa Switchyard Electrical One-Line Diagram

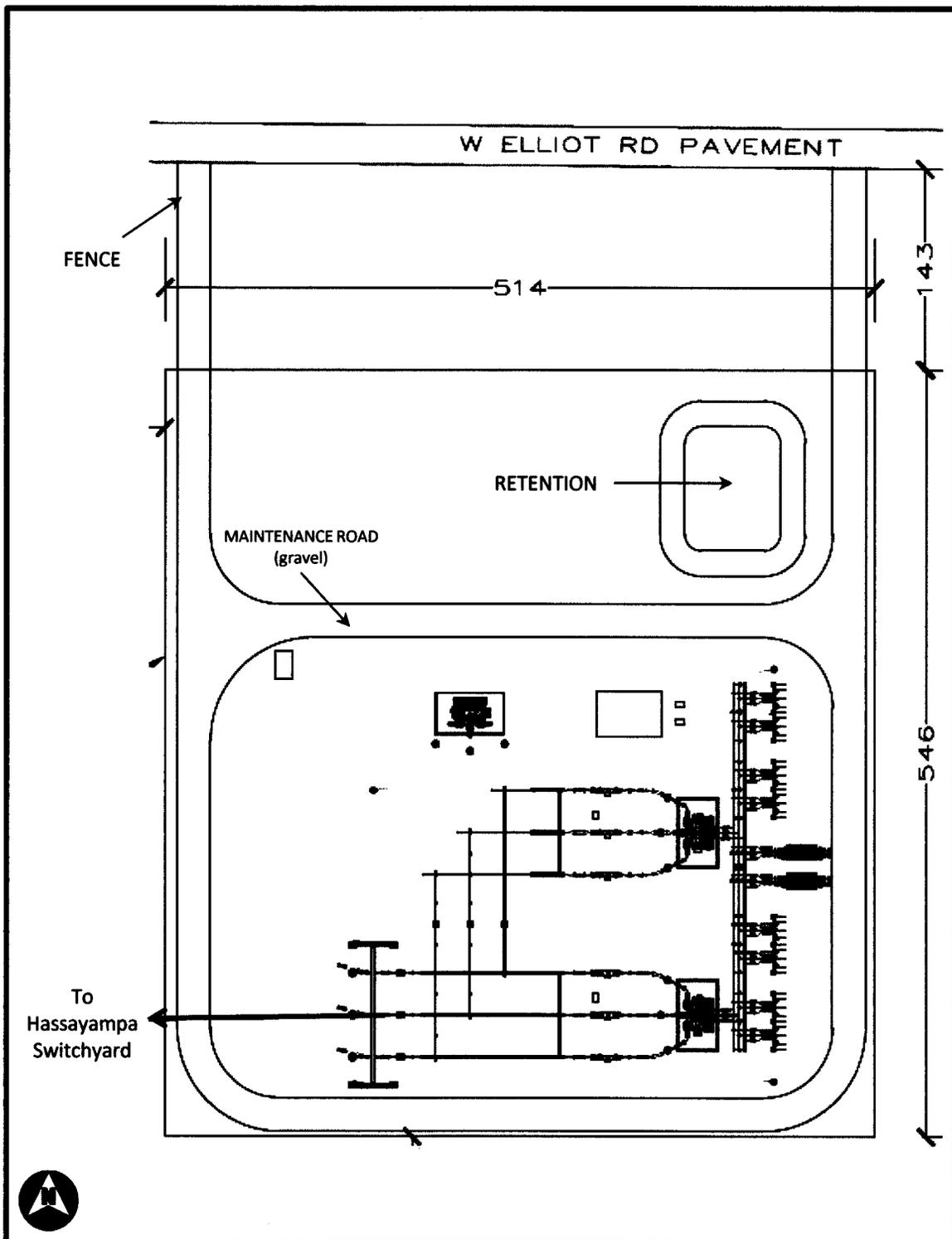


Figure 4-3
 Conceptual Layout of Project Substation
 Sun Streams Gen-tie Project



Figure 4-4
 Sun Streams Gen-tie Project
 Project Location

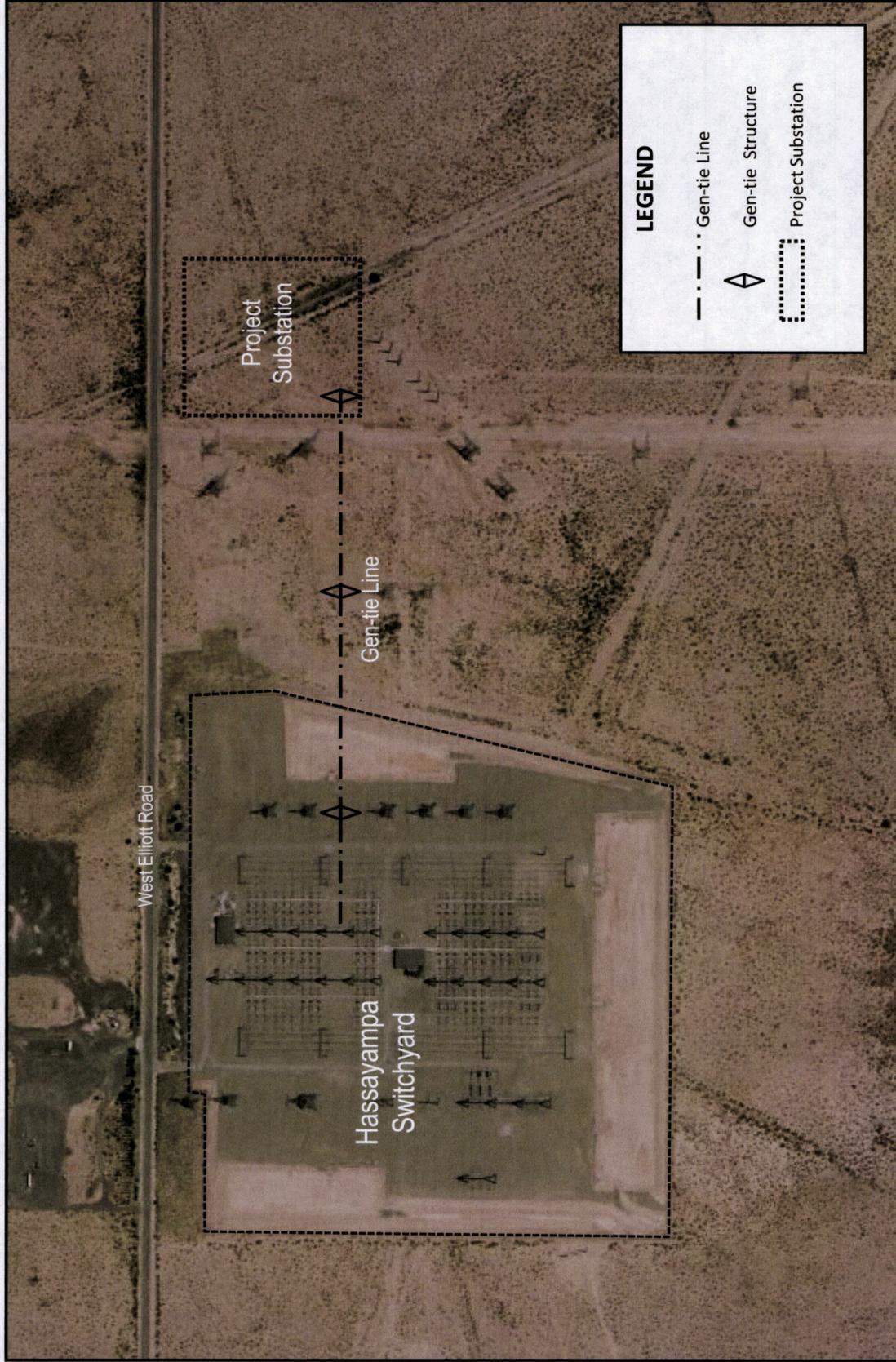


Figure 4-5
 Sun Streams Gen-tie Project
 Location of Gen-tie and End-Points

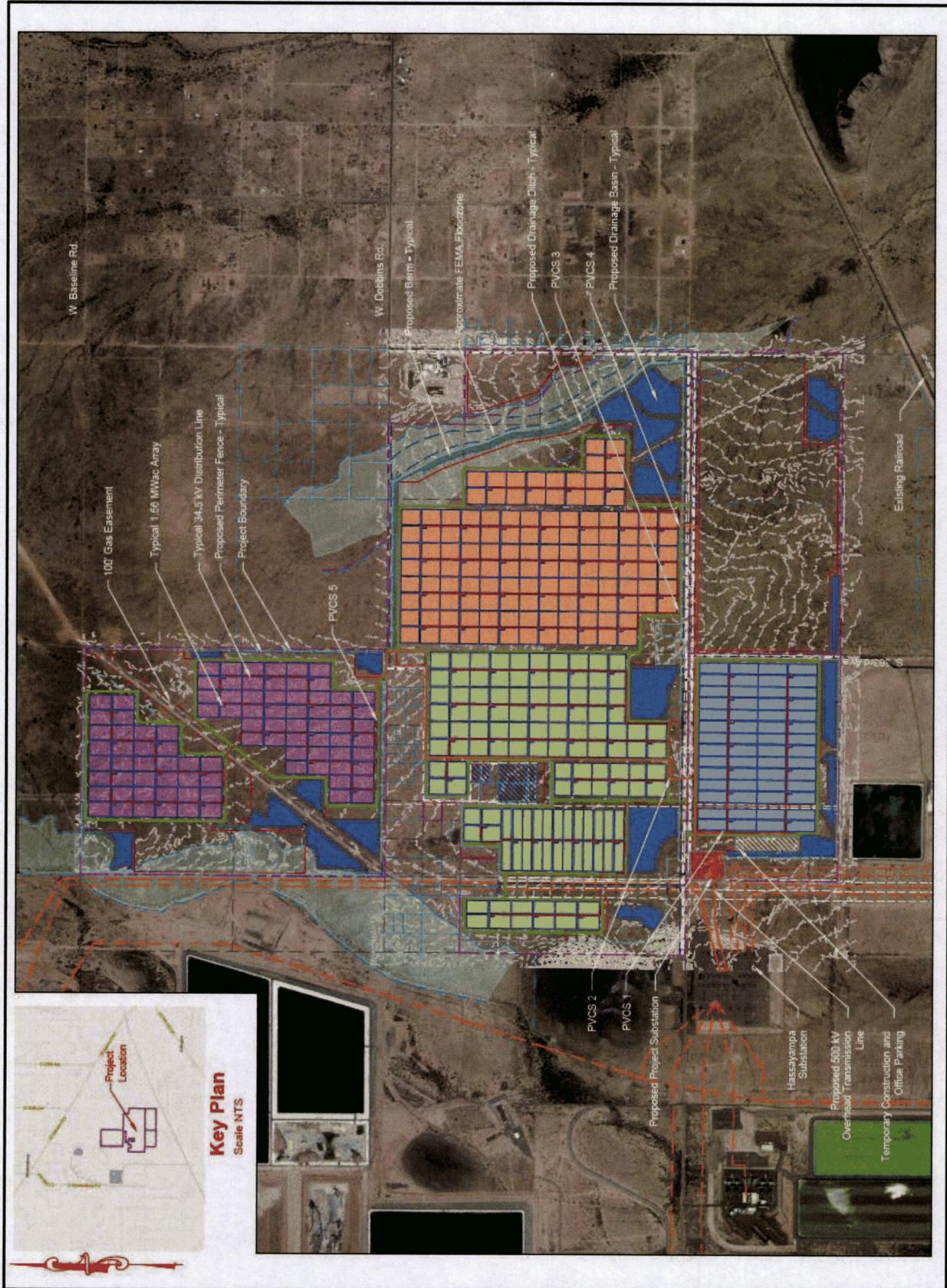


Figure 4-6
Sun Streams Solar Facility - Proposed Site Development Plan

Exhibit A

EXHIBIT A

PROJECT LOCATION AND LAND USE

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

Where commercially available, a topographic map, 1:250,000 scale, showing any proposed transmission line route of more than 50 miles in length and the adjacent area. For routes of less than 50 miles in length, use a scale of 1:62,500. If application is made for alternative transmission line routes, all routes may be shown on the same map, if practicable, designated by applicant's order of preference.

Where commercially available, a topographic map, 1:62,500 scale, of each proposed transmission line route of more than 50 miles in length showing that portion of the route within two miles of any subdivided area. The general land use plan within the area shall be shown on a 1:62,500 map required for Exhibit A-3, and for the map required by this Exhibit A-4, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay.

Figure A-1 depicts the Sun Streams Gen-tie Project and jurisdictions within a 20-mile area on a topographic map (1:250,000 scale).

Figure A-2 depicts the Sun Streams Gen-tie Project and jurisdiction within 2 miles on a topographic map (1:62,500 scale).

Figure A-3 depicts existing Maricopa County designated land use within a 2-mile radius of the Sun Streams Gen-tie Project on aerial photograph (1:62,500 scale).

- **Figure A-3a** depicts the actual industrial and utility land uses in the Project area.

Figure A-4 depicts current zoning within two miles of the Sun Streams Gen-tie Project on an aerial photograph (1:62,500 scale).

PROJECT LOCATION

The Sun Streams Gen-tie Project is located in the western portion of unincorporated Maricopa County approximately 5 miles southeast of Wintersburg, approximately 11 miles southeast of Tonopah, approximately 5 miles west northwest of Arlington, and approximately 14 miles west of Buckeye, Arizona.

The Project initiates at the Project Substation and terminates at the existing Hassayampa Switchyard located 0.3 miles immediately west. The Project Substation is located on the site of the proposed Sun Streams Solar Facility. The Project Substation and Hassayampa Switchyard are both located immediately south of West Elliot Road.

JURISDICTIONS AND LAND OWNERSHIP

As depicted on **Figure A-2**, land ownership for the Gen-tie Project and surrounding areas is private.

The jurisdiction regulating land use on the lands covered by the Sun Streams Gen-tie Project is with Maricopa County. A Special Use Permit (SUP) was originally approved for the Sun Streams Solar Facility by the Maricopa County Board of Supervisors in 2011, allowing the development of the facility on an approximate 1,070 acre portion of the site located at the northwest corner of 355th Avenue and Elliot Road. Currently, an Amendment to this SUP is being processed by Maricopa County to allow the expanded development of the Solar Facility onto an additional 1,085 acres adjoining the currently entitled area of the site.

EXISTING CONDITIONS

The existing land use in the area is dominated by industrial uses. These include several existing high voltage substations and transmission lines (including the Hassayampa Switchyard and multiple 500kV lines connecting to and emanating in multiple directions from it); existing power plants including the Palo Verde Nuclear Generating Station, Arlington Valley Energy Facility, Mesquite Generating Station, and Red Hawk Power Plant; existing large-scale PV solar facilities (Arlington Valley Solar Energy II and Mesquite Solar Project); along with other associated and required industrial infrastructure such as natural gas pipelines and rail lines. There is also some vacant and historically agricultural land nearby. **Figure A-3a** shows the currently existing industrial and utility land uses in the Project area.

Land Use Plans

As mentioned above, Maricopa County is responsible for regulating land use on and around the Project. The Maricopa County Comprehensive Plan 2020 was adopted and then revised in August 2008.

Land use planning information for the area was gathered from Maricopa County. The Project is located in the part of Maricopa County covered by the Old U.S. Highway 80 Area Plan that was finalized in 2007. The closest town included in this plan is the Town of Buckeye. Prior to completion of the 2007 plan, this area was previously within the Tonopah Area Plan planning area. Currently, most of the Old U.S. Highway 80 planning area remains unincorporated and there are few existing residences in the general area. The 1990 census showed a population of 800 increasing to 1,150 by the 2000 census for the entire planning area.

As shown on **Figure A-3**, the designated land use in the Project area is Industrial and Proposed Open Space.

Transmission lines and associated substations are allowable uses within these designations and therefore are compatible with Maricopa County Land Use plans.

Zoning

The current zoning along the Gen-tie route is Rural – 190 and is depicted on **Figure A-4**. Transmission lines are allowed in this zoning.

POTENTIAL EFFECTS

The Project would be consistent with the existing land uses, the land use designations, and zoning for the Project lands and surrounding areas. The proposed Project would be similar to and compatible with the numerous transmission lines, power plants, substations and other utilities in the immediate area.

REFERENCES

County of Maricopa. Comprehensive Plan, Eye on Future 2020. Revised August 2008 [Online]
Located at: <http://www.maricopa.gov/planning>.

County of Maricopa. US Old Highway 80 Area Plan, 2007. [Online] Located at:
<http://www.maricopa.gov/planning>.

County of Maricopa. Maricopa County Zoning Ordinance. January 2014 [Online] Located at:
<http://www.maricopa.gov/planning>.

Legend
Proposed Sun Streams Gen-tie
Project Site Location



Interstate Highway

State Highway

Railroad

20-Mile Buffer

Incorporated Areas

Park

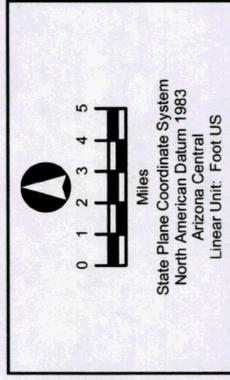
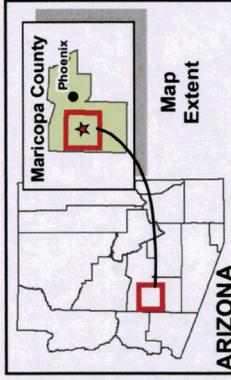
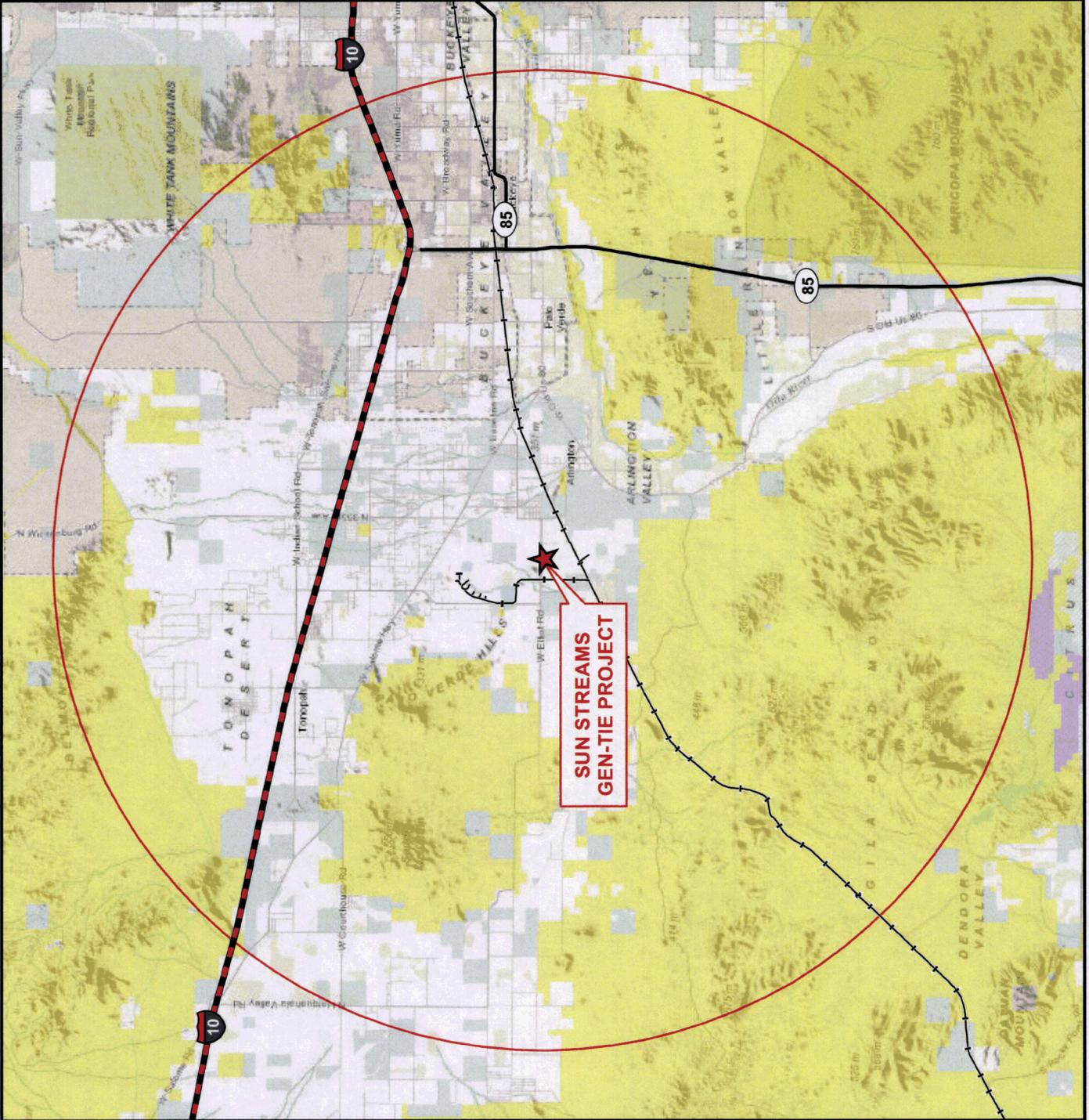
Jurisdictional Land Ownership

Bureau of Land Management Land

Bureau of Reclamation Land

Department of Defense Land

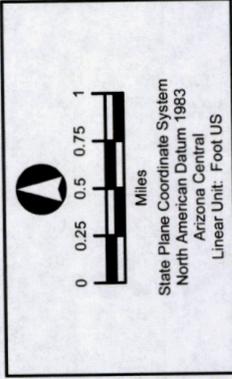
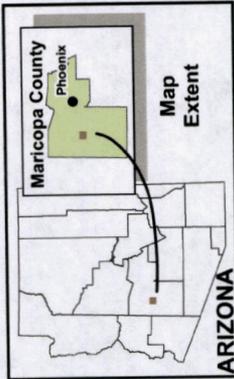
State Land



SUN STREAMS GEN-TIE PROJECT	
Figure A-1	
Project Location with Jurisdiction	
Map Extent: Maricopa County, Arizona	
Date: 4.01.14	Author: SW

Legend

-  Hassayampa Switchyard
 -  Railroad
 -  Proposed Sun Streams Gen-tie Project
 -  Proposed Sun Streams Solar Project Site Location
 -  Township / Range Boundary
 -  Section Boundary
- Jurisdictional Land Ownership**
-  Bureau of Land Management Land
 -  State Land
 -  Private Land



SUN STREAMS GEN-TIE PROJECT
Figure A-2
Jurisdiction

Map Extent: Maricopa County, Arizona
 Date: 4/01/14
 Author: shw



T1S T1N

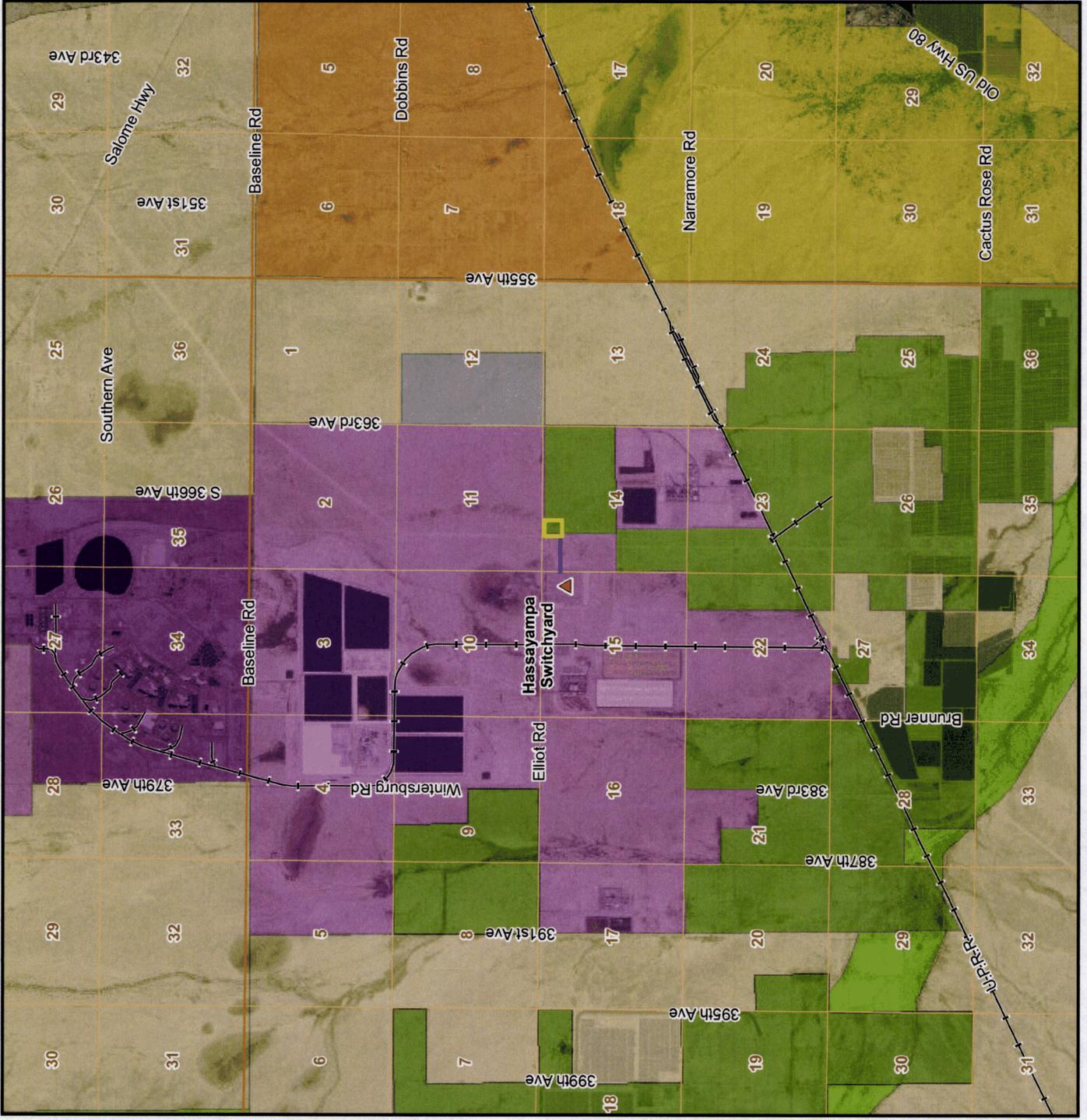
R6W R5W

R6W R5W

R6W R5W

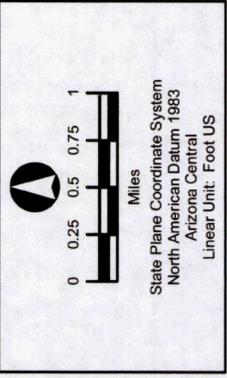
R6W R5W

T1S T1N



Legend

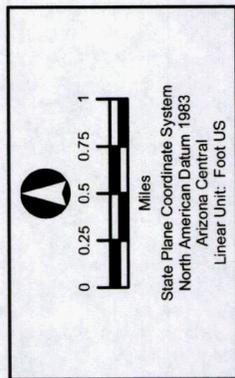
- Hassayampa Switchyard
 - Railroad
 - Proposed Sun Streams Gen-tie Project
 - Proposed Sun Streams Solar Project Site Location
 - Township / Range Boundary
 - Section Boundary
- Existing Land Use
- Business Park
 - Dedicated Open Space
 - Industrial
 - Large Lot Residential
 - Palo Verde NGS
 - Proposed Open Space
 - Rural Densities
 - Small Lot Residential



SUN STREAMS GEN-TIE PROJECT	
Figure A-3	
General Plan - Planned Land Use	
Map Extent: Maricopa County, Arizona	
Date: 4.01.14	Author: spw
A-3	

Legend

- Existing Generating Station
- Hassayampa Switchyard
- Substation
- Existing 500 kV Transmission Line
- Proposed Sun Streams Gen-tie Project
- Pipeline
- Railroad
- Proposed Sun Streams Solar Project Substation Location
- Township / Range Boundary
- Section Boundary
- Existing Land Uses
- Proposed Sun Streams Solar Project Site Location
- Arlington Valley Energy Facility
- Arlington Valley Solar Energy II
- Mesquite Generating Station
- Palo Verde Nuclear Generating Station
- Red Hawk Power Plant
- Mesquite Solar Project



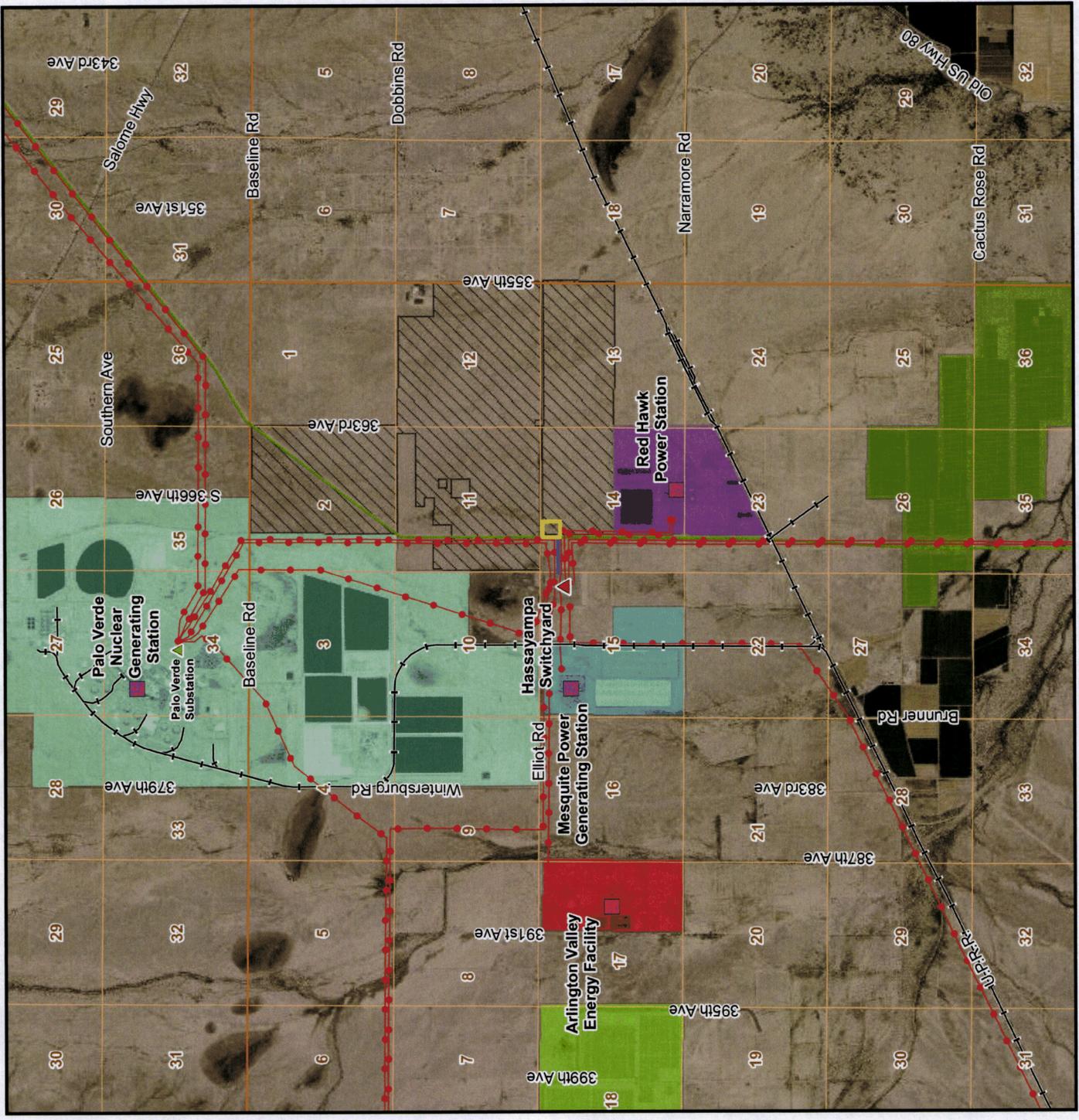
SUN STREAMS GEN-TIE PROJECT

Figure A-3a

Existing Land Uses

Map Extent: Maricopa County, Arizona

Date: 4.01.14 A-3a Author: SJW

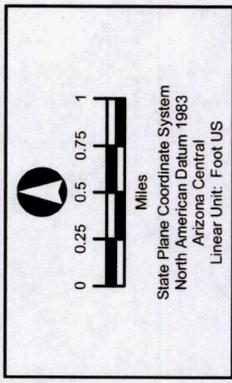


T1S T1N

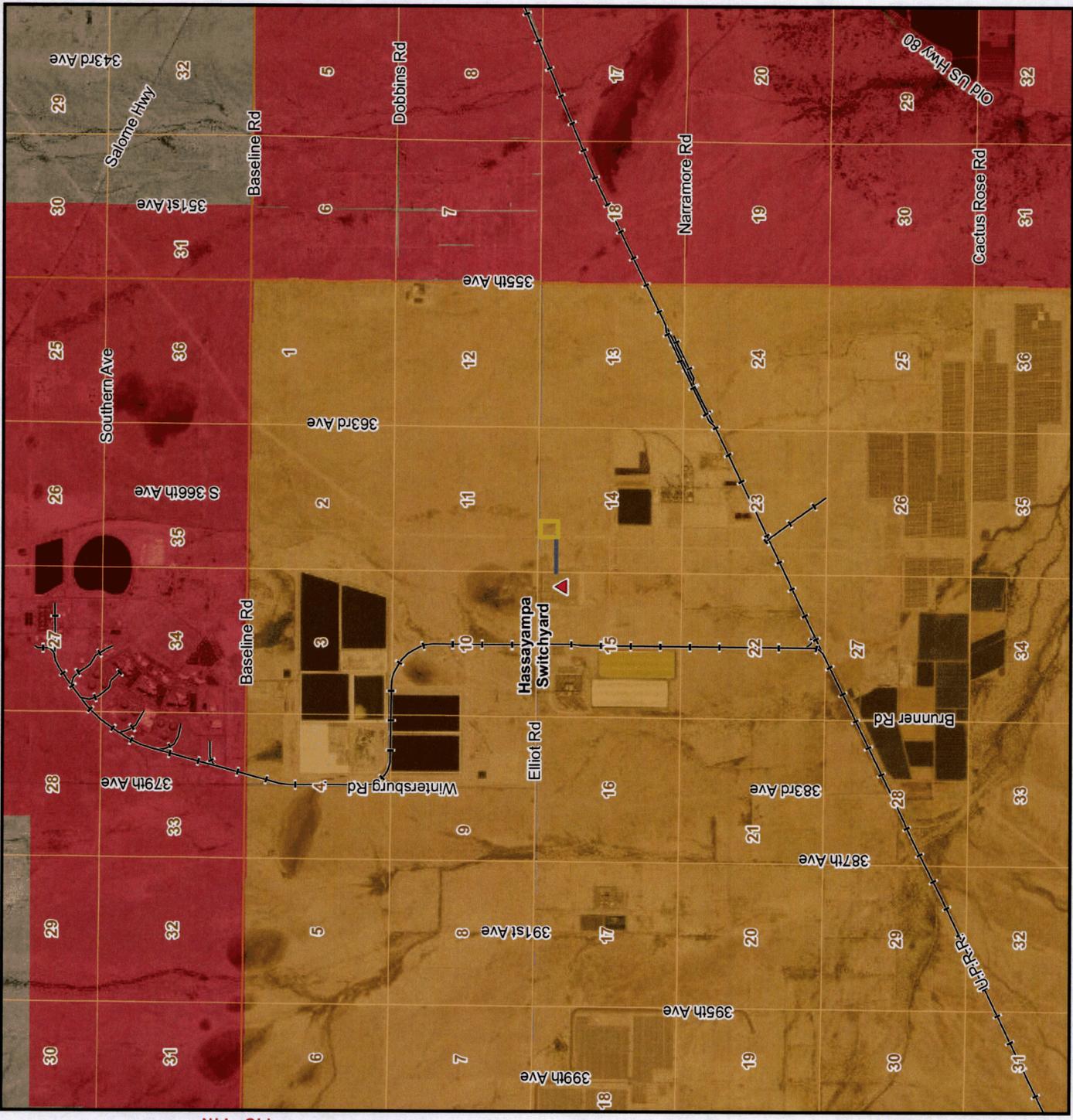
R6W R5W

R6W R5W

- Legend**
- Hassayampa Switchyard
 - Railroad
 - Proposed Sun Streams Gen-tie Project
 - Proposed Sun Streams Solar Project Site Location
 - Township / Range Boundary
 - Section Boundary
 - Existing Zoning
 - RU-190, Rural Zoning District
 - RU-43, Rural Zoning District



SUN STREAMS GEN-TIE PROJECT	
Figure A-4	
Existing Zoning	
Map Extent: Maricopa County, Arizona	Author: slw
Date: 4.01.14	A-4



T1S T1N

R6W R5W

R6W R5W

Exhibit B

EXHIBIT B

ENVIRONMENTAL STUDIES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“Attach any environmental studies which applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any federal agency or if a federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as part of this exhibit.”

The results of the environmental studies and analyses conducted by the Applicant are discussed in subsequent exhibits of this Application. **Exhibit A** describes existing and proposed land use and consistency with land use plans; **Exhibit C** addresses potential impacts to sensitive biological resources in the Project area; **Exhibit D** discusses potential impacts to other biological resources in the area; **Exhibit E** summarizes the potential effects on the area's scenic quality and cultural resources; **Exhibit F** summarizes the potential effects on recreation resources; **Exhibit H** describes how the Project could affect local plans; and **Exhibit I** discusses the noise and communication signal impacts that would be expected.

There is no Federal agency involved in the Sun Streams Gen-tie Project and therefore no environmental studies being prepared for or by a Federal agency.

Exhibit C

EXHIBIT C

AREAS OF BIOLOGICAL WEALTH

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state effects, if any, the proposed facilities will have thereon.

METHODS

Special status plant and wildlife species are subject to regulations under the authority of Federal and State agencies. Special status species related to the proposed project include those species that are listed by the U.S. Fish and Wildlife Service (USFWS) as Federal endangered, threatened, proposed, or candidate species under the Endangered Species Act of 1973 (ESA), Section 4, as amended; listed as Wildlife of Special Concern by the Arizona Game and Fish Department (AGFD); or are protected under the Arizona Native Plant Law administered by the Arizona Department of Agriculture (AZDA). Descriptions of special status species are listed below:

- Endangered species (federal) are those species in danger of extinction throughout all or a significant portion of their range.
- Threatened species (federal) are those species likely to become endangered in the foreseeable future.
- Proposed species (federal) are those species recommended for listing under Section 4 of the ESA.
- Candidate species (federal) are those species for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species are not protected under the ESA.
- USFWS Species of Concern is an informal term that refers to those species that the USFWS believes may be in need of concentrated conservation actions. Conservation actions, such as monitoring, vary depending on the health of the populations and degree and types of threats. USFWS Species of Concern receive no legal protection under the ESA and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.
- AGFD Wildlife of Special Concern are those species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona (WSCA, updated June 3, 2008).
- AZDA Highly Safeguarded or Salvage Restricted Native Plants. Special status plants are protected under the Arizona Native Plant Law (NPL) and fall into these categories: Highly Safeguarded (no collection allowed); Salvage Restricted (collection allowed only)

with permit); Export Restricted (transport out of State prohibited); Salvage Assessed (permits required to remove live trees); and Harvest Restricted (permits required to remove plant by-products).

The USFWS has published a list of proposed, candidate, threatened, and endangered species occurring by county in Arizona (USFWS 2014). In addition, the Arizona Game and Fish Department (AGFD) has published a list of special status species occurring by county in Arizona (AGFD 2014a) and a list of species occurrences by county (AGFD 2014b). These lists were consulted to provide a basis for species that might be present in the vicinity of the Gen-Tie Project. **Table C-1** presents the special status species potentially occurring within the region, listed by common name, scientific name, and status.

The USFWS and AGFD have identified 22 plant species and 53 wildlife species (10 fish, 10 mammals, 18 birds, 5 amphibians, 8 reptiles, and 2 invertebrates) with special status that have the potential to occur within Maricopa County.

An AGFD On-line Project Evaluation Program (PEP) search was completed for the Project on March 7, 2014 (AGFD 2014c) (**Appendix C-1**). The information provided in the PEP is used to guide preliminary decisions and assessments of proposed land development, management, and conservation projects, while incorporating fish and wildlife resource needs or features. The PEP indicated that the following special status species are known to occur within five miles of the Sun Streams Gen-tie Project: straw-top cholla (*Opuntia echinocarpa*).

In addition to the AGFD PEP search, AGFD and USFWS were consulted as part of the Special Use Permit (SUP) process for the Sun Streams Solar Facility. In addition, the AGFD was consulted for the Gen-tie Project and copy of the consultation letter is included at the end of **Appendix C-1**.

Prior to conducting fieldwork, aspects such as ecology and habitat requirements of each special status species were reviewed. Habitat conditions and wildlife observations on and around the Project Site were noted. Information including habitat requirements, known occurrences, and habitat types was used to evaluate the potential for occurrence of each species and to analyze the potential effects of the Project.

CURRENT CONDITIONS

Field reconnaissance surveys were conducted on March 10, 2014 by a qualified field biologist to identify any special status species on or near the Project Site. Habitats were evaluated and characterized within the Project vicinity during this field reconnaissance. The area is immediately adjacent to the Hassayampa Switchyard and numerous existing transmission lines entering and exiting that Switchyard. Much of the subject area is previously disturbed. These desert lands are in various stages of recovery, but generally support little vegetation.

Native Sonoran Desert vegetation communities in this part of the Sonoran Desert are dominated by what is characterized as the Sonoran Desert Scrub Ecosystem (Brown 1994). The Lower

Colorado River Valley Subdivision – Creosote Bush-White Bursage Series is the dominant native feature.

The Lower Colorado River Valley Subdivision is the driest of the Sonoran Desert subdivisions. Plant growth is typically both open and simple. The most common plant association in this subdivision is the Creosote Bush-White Bursage Series. Species commonly found along drainages and on flats include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), honey mesquite (*Prosopis glandulosa*), ironwood (*Olneya tesota*), blue palo verde (*Cercidium floridum*), foothills palo verde (*Cercidium microphyllum*), smoketree (*Psoralea argemone*), ocotillo (*Fouquieria splendens*), brittlebush (*Encelia farinosa*), and saguaro (*Carnegiea gigantea*). Other shrub species in this series include four-wing saltbush (*Atriplex canescens*), brittlebush (*Encelia farinosa*), and burroweed (*Isocoma tenuisecta*). Cactus species including barrel cactus (*Ferrocactus wislizenii*) and jumping cholla (*Opuntia bigelovii*) can also be found in low densities.

The Project Site contains vegetation typical for the Sonoran Desert, with creosote bush the dominant species (**Appendix C-2 – Representative Photographs**). The majority of plant species observed are native but several non-native species are common. A full list of plant species observed is provided in **Appendix C-3**. The western end of the Gen-tie Line route, inside the existing Hassayampa Switchyard fence, is devoid of vegetation. The central portion of the Gen-tie Line route appears to have been bladed and used as workspace during construction of the adjacent transmission lines and some vegetation has since re-established. The eastern portion of the Gen-tie Line route contains more natural vegetation, but has been moderately disturbed in the past. Portions of the Project Substation site have been disturbed by past activities, including the construction of an unimproved dirt road (since abandoned) that runs diagonally through the site. Other portions of the Project Substation site are less disturbed, but minor earth movement, vehicle tracks, and trash can be found throughout the area.

During the field survey, one turkey vulture (*Cathartes aura*), two Gambel's quail (*Callipepla gambelii*), and five common side-blotched lizards (*Uta stansburiana*) were observed on the site.

Wildlife habitat on the Sun Streams Gen-tie Project site is limited to Sonoran Desert scrub. The site is flat, with sandy soils, little surface rock, and no rock outcrops, natural washes, riparian vegetation, or other special or unique habitat features. The area is expected to provide low quality habitat for most wildlife species because of past disturbance to the vegetation and because it is subject to substantial human disturbance from the adjacent, well-traveled improved Elliot Road and the Hassayampa Switchyard.

There are no trees that could provide nesting opportunities for raptors or other birds, or roosting opportunities for bats. There are no features such as caves, mines, or buildings that could provide roosting opportunities for bats. The adjacent existing transmission lines could possibly provide nesting or roosting opportunities for raptors, but it is unlikely since they have been built in accordance with appropriate standards and no nests were observed on these structures. No bird nests were observed in the creosote bush, cacti, other shrubs, or on the ground on the site. A number of small (2 inches or less in diameter) rodent burrows were observed but no mammals were observed. There are also a number of mid-sized burrows on the site but none showed signs

of recent occupancy, most were collapsed, and the remainder were occupied by live vegetation, spider webs, or other indicators of non-use. Most appeared to be 6 inches or less in width and round in cross section, suggestive of past use by the desert cottontail (*Sylvilagus audubonii*). No other wildlife was observed.

The entire list of special status species reviewed for this Project is provided in **Table C-1**. The table contains 13 species listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, as amended. In addition, there are two species proposed for listing and three candidate species for listing under the ESA. The Project Site is outside the geographic range or does not contain any suitable habitat for 16 of these 18 species and the Project would have no effect on these species. The remaining two species (lesser long-nosed bat and Sonoran desert tortoise) are discussed in more detail in the Potential Effects section.

Table C-1 also contains 34 species designated as Wildlife Species of Concern by the State of Arizona. With the exception of the bald eagle, the western yellow bat, and the California leaf-nosed bat, the Project Site is either outside the geographic range or does not contain suitable habitat for any of these species. Bald eagle, western yellow bat, and California leaf-nosed bat are discussed in the Potential Effects section.

There is no potentially suitable habitat for the remainder of the special status species listed in **Table C-1**.

POTENTIAL EFFECTS

While the plant species and wildlife species and habitats described in **Table C-1** have the potential to occur within Maricopa County, there would be minimal potential impacts to these species by Project construction and operations. This is because they don't occur in the Project area and because the area is dominated by disturbed habitats being immediately adjacent to the Hassayampa Switchyard and multiple existing transmission lines in the area. Since the majority of the Project would occur on previously disturbed land, development of the Sun Streams Gen-tie Project would result in negligible impacts to special status species or habitats.

Special Status Plants

Table C-1 contains five plant species listed as Highly Safeguarded and 15 species listed as Salvage Restricted in accordance with Arizona's Native Plant Law (Arizona Department of Agriculture 2014). None of the Highly Safeguarded species was observed, nor are they expected to occur because the Project Site is outside their documented geographic range. Ten of the Salvage Restricted species are not expected to occur because the Project site is outside their documented geographic or elevation ranges; three species are cacti and were not observed during the field survey; and two (*Echinocereus engelmannii* and *Hesperocallis undulata*) were observed on site. Three individual clumps of *Echinocereus engelmannii* were observed along the Gen-tie Line route and two clumps were observed on the Project Substation site. A single individual of *Hesperocallis undulata* was observed along the Gen-tie Line route. Neither of these species is planned to be salvaged and notification to the Arizona Department of Agriculture would occur prior to destruction.

Special Status Wildlife

The lesser long-nosed bat (Federal Endangered and AZ Wildlife of Special Concern) is a summer resident of southern Arizona. It specializes in feeding on the nectar of columnar cactus such as organ pipe and saguaro, as well as various agave species (AGFD 2011a). It roosts in caves, mine tunnels, and occasionally old buildings, and were once reported to use a culvert. The Project site is on the extreme northwest edge of the predicted distribution of the species. The nearest documented occurrences are approximately 60 miles to the south (AGFD 2011a). With the exception of a single saguaro cactus observed several hundred meters north of Elliot Road, there are no suitable nectar sources on or near the Project Site. This species is not expected to occur at the Project Site based on the lack of roosting and foraging habitat, as well as the site's location at the periphery of the species' range. The proposed Sun Streams Gen-tie Project would have no effect on the lesser long-nosed bat.

The Sonoran population of the desert tortoise (Federal Candidate and AZ Wildlife of Special Concern) has been documented within 10 miles of the Project Site. It inhabits rocky slopes and bajadas in Sonoran and Mojave desert scrub. It constructs burrows in loose soil for shelter and reproduction and eats a variety of grasses, forbs, and succulents (AGFD 2010). Typical burrows are flat on the bottom and domed on top to match the shape of the shell (USFWS 2009). During the winter hibernation period, burrow entrances are sometimes become blocked and are dug out once activity begins again in the spring. This species is not expected to occur at the Project Site because there is no suitable habitat on or immediately adjacent to the site and there are no burrows meeting the configuration and size of desert tortoise burrows. Even the observed collapsed and apparently inactive, medium-sized burrows are not shaped like typical desert tortoise burrows. The proposed Sun Streams Gen-tie Project would have no effect on the Sonoran population of the desert tortoise.

Critical habitat has been designated for six of the listed species and has been proposed for one listed species, one species proposed for listing, and one candidate species (**Table C-1**). The Project Site is not located within designated or proposed critical habitat for any of these nine species.

Occurrence of the bald eagle (Federal Species of Concern and AZ Wildlife Species of Concern) is not expected at the Project Site because of the lack of suitable nesting and roosting habitat, as well as the lack of open water, which is a common habitat component (AGFD 2011b). A very slight chance remains that bald eagles could pass over the site while foraging in the general area but they are not expected to forage on or near the Project Site because of the high level of human activity and the lack of preferred prey (for example, fish and waterfowl [AGFD 2011b]). The proposed Sun Streams Gen-tie Project would not have any measureable effect on bald eagles.

The western yellow bat (AZ Wildlife Species of Concern) is predicted to occur throughout much of southern Arizona, although the closest documented occurrences are about 30 miles from the Project Site (AGFD 2011c). The western yellow bat is generally associated with and roosts in riparian habitat with deciduous trees, as well as palm trees, especially in urban settings (AGFD 2011c). This species is not expected to pass through or forage on or near the project site because

of the lack of preferred roosting and foraging habitat. The proposed Sun Streams Gen-tie Project would have no effect on the western yellow bat.

The California leaf-nosed bat (Federal Species of Concern and AZ Wildlife Species of Concern) is predicted to occur throughout southwestern Arizona and has been documented within 10 miles of the Project site (AGFD 2001). The California leaf-nosed bat generally roosts in mines, caves, and rock shelters (AGFD 2001). It forages for insects and may also eat cactus fruits (AGFD 2001). The California leaf-nosed bat may occasionally pass through or forage on or near the Project Site but the lack of nearby roosting habitat and an expected low density of insect prey suggests this would be a rare occurrence. The proposed Sun Streams Gen-tie Project would not have any measureable effect on the California leaf-nosed bat.

There would be a slight risk for bird strikes from the short Gen-tie Line but the overall risk is not expected to increase over current risk because of the presence of the many other lines in the immediate vicinity. To ensure the risk of collisions is minimized, the Gen-tie Line will be constructed following industry standards aimed at reducing avian collisions (APLIC 2006).

Table C-1 Special Status Species Reviewed

Scientific Name	Common Name	Status*			Pre-field Review and Survey Results
		ESA	Critical Habitat	State	
Amphibians					
<i>Anaxyrus microscaphus</i>	Arizona toad	SC			Project site is outside of geographic range.
<i>Gastrophryne olivacea</i>	Western narrow-mouthed toad			WSC	Project site is outside of geographic range.
<i>Lithobates chiricahuensis</i>	Chiricahua leopard frog	LT	Y	WSC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Lithobates yavapaiensis</i>	Lowland leopard frog	SC		WSC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Smilisca fodiens</i>	Lowland burrowing tree frog			WSC	Project site is outside of geographic range.
Birds					
<i>Ardea alba</i>	Great egret			WSC	Project site does not contain suitable nesting or foraging habitat.
<i>Athene cunicularia hypugaea</i>	Western burrowing owl	SC			Project site does not currently contain suitable nesting or roosting habitat. Occasional foraging possible.
<i>Buteogallus anthracinus</i>	Common black-hawk			WSC	Project site is outside of geographic range.
<i>Charradrius nivosus</i>	Western snowy plover			WSC	Project site does not contain suitable nesting or foraging habitat.
<i>Coccyzus americanus</i>	Yellow-billed cuckoo (Western U.S. DPS)	PT		WSC	Project site does not contain suitable nesting or foraging habitat.
<i>Dendrocygna autumnalis</i>	Black-bellied whistling-duck			WSC	Project site does not contain suitable nesting or foraging habitat.
<i>Egretta thula</i>	Snowy egret			WSC	Project site does not contain suitable nesting or foraging habitat.
<i>Empidonax traillii eximius</i>	Southwestern willow flycatcher	LE	Y	WSC	Project site does not contain suitable nesting or foraging habitat.
<i>Falco peregrinus anatum</i>	American peregrine falcon	SC		WSC	Project site is outside of geographic range.

Table C-1 Special Status Species Reviewed

Scientific Name	Common Name	Status*			Pre-field Review and Survey Results
		ESA	Critical Habitat	State	
<i>Glaucoctonus brasilianum cactorum</i>	Cactus ferruginous pygmy-owl	SC		W/SC	Project site is outside of geographic range.
<i>Haliaeetus leucocephalus</i> (wintering pop.)	Bald eagle - winter population	SC		W/SC	Project site does not contain suitable nesting or roosting habitat. Occasional foraging possible.
<i>Haliaeetus leucocephalus</i> pop. 3	Bald Eagle - Sonoran Desert population	SC		W/SC	Project site does not contain suitable nesting or roosting habitat. Occasional foraging possible.
<i>Ictinia mississippiensis</i>	Mississippi kite			W/SC	Project site is outside of geographic range.
<i>Ixobrychus exilis</i>	Least bittern			W/SC	Project site does not contain suitable nesting or foraging habitat.
<i>Megascops alcyon</i>	Belted kingfisher			W/SC	Project site is outside of geographic range.
<i>Pandion haliaetus</i>	Osprey			W/SC	Project site is outside of geographic range.
<i>Rallus longirostris yumanensis</i>	Yuma clapper rail	LE		W/SC	Project site does not contain suitable nesting or foraging habitat.
<i>Strix occidentalis lucida</i>	Mexican spotted owl	LT	Y	W/SC	Project site is outside of geographic range.
Fish					
<i>Agosia chrysogaster chrysogaster</i>	Gila longfin dace	SC			No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Catostomus clarkii</i>	Desert sucker	SC			No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Catostomus insignis</i>	Sonora sucker	SC			No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Cyprinodon macularius</i>	Desert pupfish	LE	Y	W/SC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Gila elegans</i>	Bonytail	LE	Y	W/SC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Gila robusta</i>	Roundtail chub	C*		W/SC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.

Table C-1 Special Status Species Reviewed

Scientific Name	Common Name	Status*			Pre-field Review and Survey Results
		ESA	Critical Habitat	State	
<i>Poeciliopsis occidentalis occidentalis</i>	Gila topminnow	LE		WSC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Psychocheilus lucius</i>	Colorado pikeminnow	LE, XN		WSC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Rhinichthys osculus</i>	Speckled dace	SC			No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
<i>Xyrauchen texanus</i>	Razorback sucker	LE	Y	WSC	No aquatic habitats are present on or near the Project site. The Project site has no drainage features that could lead to effects to downstream populations.
Invertebrates					
<i>Cicindela oregona muricopa</i>	Maricopa tiger beetle	SC			Project site is outside of geographic range.
<i>Maicopella allysmithi</i>	Squaw Park talus snail	SC			Project site is outside of geographic range.
Mammals					
<i>Antilocapra americana sonoriensis</i>	Sonoran pronghorn	LE		WSC	Project site is outside of geographic range.
<i>Corynorhinus townsendii pallascens</i>	Pale Townsend's big-eared bat	SC			Project site does not contain suitable day or night roosting habitat. Occasional foraging possible.
<i>Eumops perotis californicus</i>	Greater western bonneted bat	SC			Project site does not contain suitable day or night roosting habitat. Occasional foraging possible.
<i>Lasius blossevillii</i>	Western red bat			WSC	Project site is outside of geographic range.
<i>Lasius xanthinus</i>	Western yellow bat			WSC	Project site does not contain suitable day or night roosting habitat. Occasional foraging possible.
<i>Leptoncyteris curassowae yerhabuanae</i>	Lesser long-nosed bat	LE		WSC	Project site does not contain suitable day or night roosting habitat or nectar sources. Not expected to occur.
<i>Lepus alleni</i>	Antelope jackrabbit				Project site is outside of geographic range.
<i>Macrotus californicus</i>	California leaf-nosed bat	SC		WSC	Project site does not contain suitable day or night roosting habitat. Occasional foraging possible.

Table C-1 Special Status Species Reviewed

Scientific Name	Common Name	Status*			Pre-field Review and Survey Results
		ESA	Critical Habitat	State	
<i>Myotis velifer</i>	Cave myotis	SC			Project site does not contain suitable day or night roosting habitat. Occasional foraging possible.
<i>Myotis yumanensis</i>	Yuma myotis	SC			Project site does not contain suitable day or night roosting habitat. Occasional foraging possible.
Plants					
<i>Abutilon parishii</i>	Pima Indian mallow	SC		SR	Project site is outside of geographic range.
<i>Agave delamateri</i>	Tonto Basin agave	SC		HS	Project site is outside of geographic range.
<i>Agave murpheyi</i>	Hohokam agave	SC		HS	Project site is outside of geographic range.
<i>Agave toumeyana</i> var. <i>bella</i>	Toumey agave			SR	Project site is below the documented elevation range. Not observed on site or expected to occur.
<i>Agave x arizonica</i>	Arizona agave			HS	Project site is outside of geographic range.
<i>Allium bigelovii</i>	Bigelow onion			SR	Project site is outside of geographic range.
<i>Echinocereus engelmannii</i>	Engelmann's hedgehog cactus			SR	Observed on site.
<i>Echinomastus erectocentrus</i> var. <i>acuminensis</i>	Acuna cactus	LE	P	HS	Project site is outside of geographic range.
<i>Erigeron lobatus</i>	Lobed fleabane				Not observed on site.
<i>Erigeron piscaticus</i>	Fish Creek fleabane	SC		SR	Project site is outside of geographic range.
<i>Eriogonum ripleyi</i>	Ripley wild buckwheat	SC		SR	Project site is outside of geographic range.
<i>Ferocactus cylindraceus</i>	Desert barrel cactus			SR	Not observed on site or expected to occur.
<i>Ferocactus emoryi</i>	Emory's barrel cactus			SR	Not observed on site or expected to occur.
<i>Fremontodendron californicum</i>	Flannel bush			SR	Project site is outside of geographic range.
<i>Hesperocallis undulata</i>	Desert ily			SR	Observed on site.
<i>Mammillaria viridiflora</i>	Varied fishhook cactus			SR	Project site is outside of geographic range.

Table C-1 Special Status Species Reviewed

Scientific Name	Common Name	Status*			Pre-field Review and Survey Results
		ESA	Critical Habitat	State	
<i>Opuntia echinocarpa</i>	Straw-top cholla			SR	Not observed on site.
<i>Opuntia engelmannii</i> var. <i>flavispmia</i>	Cactus apple			SR	Project site is slightly below the documented elevation range. Not observed on site or expected to occur.
<i>Perilyle saxicola</i>	Fish Creek rock daisy	SC			Project site is outside of geographic range.
<i>Purshia subintegra</i>	Arizona cliff rose	LE		HS	Project site is outside of geographic range.
<i>Stenocercus thurberi</i>	Organ pipe cactus			SR	Project site is outside of geographic range.
<i>Tumamoca macdougallii</i>	Tumamoc globeberry			SR	Project site is outside of geographic range.
Reptiles					
<i>Aspidoscelis xanthonota</i>	Red-back whiptail	SC			Project site is outside of geographic range.
<i>Chionactis occipitalis klauberi</i>	Tucson shovel-nosed Snake	C*	P		Project site is outside of geographic range.
<i>Gopherus morafkai</i>	Sonoran Desert tortoise	C*		WSC	Not observed on site or expected to occur.
<i>Heloderma suspectum cinctum</i>	Banded Gila monster	SC			Project site is outside of geographic range.
<i>Lichanura trivirgata</i>	Rosy boa	SC			Not observed on site or expected to occur.
<i>Sauronotus ater</i> (Arizona Population)	Arizona chuckwalla	SC			Not observed on site or expected to occur.
<i>Sauronotus ater</i> (Western Population)	Western chuckwalla	SC			Not observed on site or expected to occur.
<i>Thamnophis eques megalops</i>	Northern Mexican garter snake	PT	P	WSC	Project site is outside of geographic range.

***Status Codes**

ESA (Endangered Species Act of 1973 as amended)

- LE Listed Endangered
- LT Listed Threatened
- XN Experimental Nonesential population

- PT Proposed for listing as Threatened
- C* Candidate. Species for which the USFWS has on file sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. Proposed rules for these species are precluded at present by other higher priority listing actions. These species have been subject to a continued warranted-but-precluded finding on a resubmitted petition.
- SC Species of Concern. The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS, but neither term has official status.

Critical Habitat (ESA)

- P Proposed: Critical Habitat has been proposed
- Y Yes: Critical Habitat has been designated

State of Arizona

- HS Highly Safeguarded: no collection allowed (Arizona Department of Agriculture, Native Plant Law)
- SR Salvage Restricted: collection only with permit (Arizona Department of Agriculture, Native Plant Law)
- WSC Wildlife Species of Concern (Arizona Game and Fish Department): Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines.

REFERENCES

- Arizona Administrative Code. 2014a. Regulated and Restricted Noxious Weeds; Prohibited Noxious Weeds. Title 3, Chapter 4, Article 2, sections 244 and 245. Retrieved on March 13, 2014 from http://www.azsos.gov/public_services/Title_03/3-04.htm#Article_2.
- Arizona Administrative Code. 2014b. Protected Native Plant Destruction by a Private Landowner. Title 3, Chapter 3, Article 11, section R3-3-1102. Retrieved on March 13, 2014 from http://www.azsos.gov/public_services/Title_03/3-03.htm#ARTICLE_11.
- Arizona Department of Agriculture. 2014. Protected Native Plants by Categories. Retrieved on March 13, 2014 from <http://www.azda.gov/ESD/protplantlist.aspx>.
- Arizona Game and Fish Department (AGFD). 2014a. Arizona Heritage Data Management System (HDMS), Special Status Species by County, Taxon, Scientific name (updated January 6, 2014) [Web Page]. Located at http://www.azgfd.gov/w_c/edits/documents/ssspecies_bycounty_012.pdf. Accessed: March 6, 2014.
- AGFD. 2014b. Arizona HDMS, Element Status Designations by County, Taxon, Scientific Name (updated January 6, 2014) [Web Page]. Located at http://www.azgfd.gov/w_c/edits/documents/allspecies_bycounty_012.pdf. Accessed: March 6, 2014.
- AGFD. 2014c. Arizona's On-line Environmental Review Tool. [Web Page] Located at <http://www.azgfd.gov/hgis/>. Search ID: 20140307022682. Accessed: March 7, 2014.
- Arizona Game and Fish Department. 2011a. *Leptonycteris curasoae yerbabuena*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Retrieved on March 6, 2014 from http://www.azgfd.gov/w_c/edits/documents/Leptcuye.fi_000.pdf.
- Arizona Game and Fish Department. 2011b. *Haliaeetus leucocephalus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Retrieved on March 6, 2014 from http://www.azgfd.gov/w_c/edits/documents/Halileuc.fi.pdf.
- Arizona Game and Fish Department. 2011c. *Lasiurus xanthinus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Retrieved on March 6, 2014 from http://www.azgfd.gov/w_c/edits/documents/Lasixant.fi_001.pdf.

- Arizona Game and Fish Department. 2010. *Gopherus agassizii*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Retrieved on March 6, 2014 from http://www.azgfd.gov/w_c/edits/documents/Gophagas.fi_004.pdf.
- Arizona Game and Fish Department. 2001. *Macrotus californicus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Retrieved on March 6, 2014 from http://www.azgfd.gov/w_c/edits/documents/Macrcali.fi_001.pdf.
- Arizona Revised Statutes. 2014. Destruction of protected plants by private landowners; notice; exception. Title 3, Chapter 7, Article 1, section 3-904. Retrieved on March 13, 2014 from <http://www.azleg.state.az.us/FormatDocument.asp?inDoc=/ars/3/00904.htm&Title=3&DocType=ARS>.
- Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines – The State of the Art in 2006. Located at [http://www.aplic.org/SuggestedPractices2006\(LR-2watermark\).pdf](http://www.aplic.org/SuggestedPractices2006(LR-2watermark).pdf).
- U.S. Fish and Wildlife Service (USFWS). 2014. Endangered Species List, List of Species by County, Arizona. [Web Page] Located at http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=04013. Accessed: March 6, 2014.
- USFWS. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California.

**Appendix C-1 – AGFD On-line Project Evaluation
Program Search Results**



April 3, 2014

Ginger Ritter
Project Evaluation Specialist
Arizona Game and Fish Department
5000 W. Carefree Highway
Phoenix, AZ 85086-5000

RE: Proposed Sun Streams Gen-Tie Project

Dear Ms. Ritter:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long and will have an associated Project Substation that would cover about 5 acres.

The Project area is immediately adjacent to the Hassayampa Switchyard and the numerous existing transmission lines entering and exiting that Switchyard. The majority of the subject area is previously disturbed. We have conducted a review of the biological issues for the proposed Project. We have completed Arizona's On-Line Environmental Review Tool for the Project area (Project Search ID 20140307022682- results attached), conducted site visits, and reviewed the special status species by county list published by AGFD HDMS for special status species in Maricopa County.

Sun Streams, LLC is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission for the Gen-Tie Project. We would greatly appreciate your review and comments.

Thank you in advance for your assistance. Please contact me with any questions (phone: 303.618.7910 or email pgolden@heritage-ec.com).

Sincerely,

Patrick Golden SB

Patrick Golden

3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us

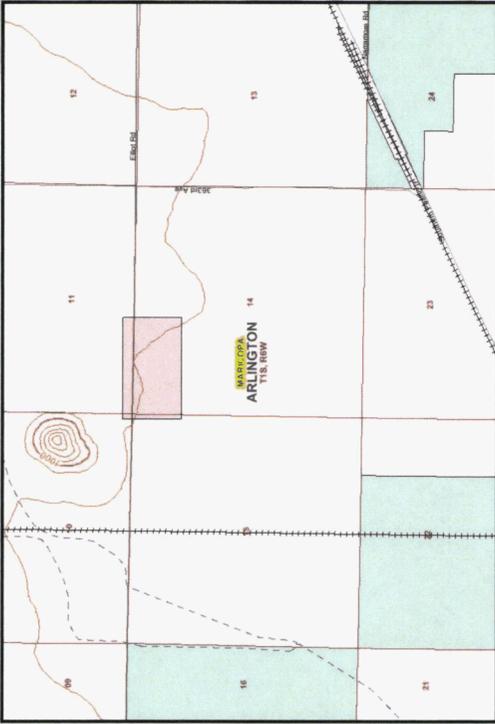
Arizona's On-line Environmental Review Tool

Search ID: 20140307022682

Project Name: Sun Streams

Date: 3/7/2014 10:30:12 AM

Project Location



The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
Opuntia echinocarpa	Straw-top Cholla				SF

Project Name: Sun Streams
Submitted By: Matt Schweich
On behalf of: PRIVATE
Project Search ID: 20140307022682
Date: 3/7/2014 10:30:07 AM
Project Category: Energy Storage/Production/Transfer,Energy Transfer,substation
Project Coordinates (UTM Zone 12-NAD 83): 328146.771, 3691300.473 meter
Project Area: 72.279 acres
Project Perimeter: 2243.597 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1333
Quadrangle Name: ARLINGTON
Project locality is currently being scoped

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

Arizona's On-line Environmental Review Tool

Search ID: 20140307022682

Project Name: Sun Streams

Date: 3/7/2014 10:30:12 AM

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: <http://arizonaes.fws.gov/>.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Energy Storage/Production/Transfer,Energy Transfer,substation

Project Type Recommendations:

All degraded and disturbed lands should be restored to their natural state. Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Based on the project type entered; coordination with State Historic Preservation Office may be required
<http://azstateparks.com/SHPO/index.html>

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona

has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants <http://www.azda.gov/PSD/quarantine5.htm>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control:

<http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

Follow manufacturer's recommended application guidelines for all chemical treatments. The U.S. Fish and Wildlife Service, Region 2, Environmental Contaminants Program has a reference document that serves as their regional pesticide recommendations for protecting wildlife and fisheries resources, titled "Recommended Protection Measures for Pesticide Applications in Region 2 of the USFWS." The Department recommends direct or indirect impacts to sensitive species and their forage base from the application of chemical pesticides or herbicides be considered carefully.

Impacts to raptors by above ground power lines and poles have been well documented. A number of structural improvements can minimize potential impacts to raptors and other migratory birds. Arizona Public Service (APS) offers guidelines to reduce mortality to these species http://www.aps.com/my_community/Environmental/Environmental_10.html. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated. Please contact the Project Evaluation Program for further recommendations regarding trenching and power line associated activities.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area.

Arizona's On-line Environmental Review Tool

Search ID: 20140307022682

Project Name: Sun Streams

Date: 3/7/2014 10:30:12 AM

Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Project Location and/or Species recommendations:

Heritage Data Management System records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area (refer to page 1 of the receipt). Please contact:

Arizona Department of Agriculture

1688 W Adams

Phoenix, AZ 85007

Phone: 602-542-4373

signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).

7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch

Arizona Game and Fish Department

5000 West Carefree Highway

Phoenix, Arizona 85086-5000

Phone Number: (623) 236-7600

Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and**

4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.

5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's

print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature: _____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Arizona's On-line Environmental Review Tool

Search ID: 20140307022682

Project Name: Sun Streams

Date: 3/7/2014 10:30:12 AM

Person Conducting Search (if not applicant)

Agency/organization: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Appendix C-2 – Representative Photographs



Photograph 1. Northeast corner of Project Substation site, looking west. Elliot Road on the right, Hassayampa Switchyard in the background.



Photograph 2. Northeast corner of Project Substation site, looking south across a moderately disturbed portion of the site.



Photograph 3. Southwest corner of Project Substation site, looking north along an access road and heavily disturbed roadside.



Photograph 4. East end of Gen-tie Line route, looking west toward Hassayampa Switchyard, across an access road toward some of the thicker vegetation on the site.



Photograph 5. West end of Gen-tie Line route, looking east, across an access road, toward area previously cleared for construction of the transmission line structure on the right.



Photograph 6. Center of Project Substation site, looking northeast, into some of the thicker, less disturbed vegetation on the site.



Photograph 7. Center of Project Substation site, looking northwest, showing abandoned road on right side.



Photograph 8. Typical, collapsed medium-sized burrow. Depth as shown is approximately 9 inches. Width is approximately 6 inches.

Appendix C-3 – Plant Species Observed

PLANT SPECIES OBSERVED		
Family	Genus / Species	Common Name
Asteraceae		
	<i>Ambrosia dumosa</i>	White bur-sage
	<i>Encelia farinosa</i>	Brittlebush
	<i>Isocoma acradenia</i>	Alkali goldenbush
Boraginaceae		
	<i>Amsinckia tessellata</i>	Bristly fiddleneck
	<i>Cryptantha angustifolia</i>	Panamint cryptantha
Brassicaceae		
	<i>Sisymbrium altissimum</i> *	Tall tumblemustard
Cactaceae		
	<i>Echinocereus engelmannii</i> ¹	Engelmann's hedgehog cactus
Euphorbiaceae		
	<i>Chamaesyce albomarginata</i>	White-margin sandmat
Geraniaceae		
	<i>Erodium cicutarium</i> *	Red-stem stork's bill
Liliaceae		
	<i>Hesperocallis undulata</i> ¹	Desert lily
Malvaceae		
	<i>Sphaeralcea ambigua</i>	Apricot mallow
Plantaginaceae		
	<i>Plantago ovata</i>	Desert indianwheat
	<i>Plantago patagonica</i>	Woolly plantain
Poaceae		
	<i>Schismus barbatus</i> *	Common Mediterranean grass
Polemoniaceae		
	<i>Eriastrum eremicum</i>	Desert woollystar
Zygophyllaceae		
	<i>Larrea tridentata</i>	Creosote bush

* non-native

¹ Salvage restricted

Exhibit D

EXHIBIT D

BIOLOGICAL RESOURCES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“List the fish, wildlife, plant life and associated forms of life associated with the vicinity of the proposed sites or route and describe the effects, if any, other proposed facilities will have thereon.”

CURRENT CONDITIONS

Field reconnaissance surveys were conducted on March 10, 2014 by a qualified field biologist to identify any special status species on or near the Project Site. Habitats were evaluated and characterized within the Project vicinity during this field reconnaissance. The area is immediately adjacent to the Hassayampa Switchyard and multiple existing transmission lines entering and exiting the Switchyard. Much of it is previously disturbed. These lands are in various stages of recovery, but generally support little vegetation.

Prior to conducting fieldwork, aspects such as ecology and habitat requirements of various species were reviewed. Habitat conditions and wildlife observations on and around the Project Site were recorded. Information including habitat requirements, known occurrences, and habitat types, was used to evaluate the potential for occurrence of species and the potential effects of Project implementation on biological resources within the vicinity of the proposed Gen-tie Line and Project Substation.

Tables D-1, D-2, D-3, and D-4 contain lists of common plant life, mammals, birds, reptiles and amphibians potentially present in Maricopa County and within the vicinity of the Project Site. **Table D-3** specifically lists the species noted during a breeding bird survey conducted by AGFD near the Project Site (Corman and Wise-Gervais 2005).

The field reconnaissance surveys determined that overall plant diversity and density are very low. The native vegetation communities at and nearby the Project Site are described in the following section.

Vegetation

Table D-1 presents a list of common plant species that potentially could occur or have been recorded in the vicinity of the Project. **Appendix C-3** is a list of species observed during the field survey. The Arizona Native Plant Law (NPL) states that if protected, when native plant species are to be destroyed or removed, the property owner must contact the Arizona Department of Agriculture prior to such actions. This process does not restrict the removal of such species on private property, but is meant to encourage the salvage of these plants when possible. Two salvage restricted species (Englemann’s

hedgehog cactus and desert lily) that are protected under the NPL are known to occur in the vicinity of the Project (refer to **Exhibit C**).

Native vegetation communities in this part of the Sonoran Desert are dominated by what is characterized as the Sonoran Desert Scrub Ecosystem (Brown 1994). Common plant species of that community are listed in **Table D-1**.

The Lower Colorado River Valley Subdivision is the driest of the Sonoran Desert subdivisions. Plant growth is typically both open and simple. The most common plant association in this subdivision is the Creosote Bush-White Bursage Series. Species commonly found along drainages and on flats include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), honey mesquite (*Prosopis glandulosa*), ironwood (*Olneya tesota*), blue palo verde (*Cercidium floridum*), foothills paloverde (*Cercidium microphyllum*), smoketree (*Psoralea argophylla*), ocotillo (*Fouquieria splendens*), brittlebush (*Encelia farinosa*), and saguaro (*Carnegiea gigantea*). Other shrub species in this series include four-wing saltbush (*Atriplex canescens*) and burroweed (*Isocoma tenueseca*). Cactus species including barrel cactus (*Ferrocactus wislizenii*) and jumping cholla (*Opuntia bigelovii*) are also found in low densities.

The Project Site contains vegetation typical for the Sonoran Desert, with creosote bush the dominant species (**Appendix C-2 – Representative Photographs**). The majority of plant species observed are native; however, several non-native species are common. A full list of plant species observed is provided in **Appendix C-3**. The western end of the Gen-tie Line route, inside the existing Hassayampa Switchyard fence, is devoid of vegetation. The central portion of the Gen-tie Line route appears to have been bladed and used as workspace during construction of the adjacent transmission lines; some vegetation has since re-established. The eastern portion of the Gen-tie Line route contains more natural vegetation, but has been moderately disturbed in the past. Portions of the Project Substation site have been disturbed by past activities, including the construction of a dirt road (since abandoned) that runs diagonally through the Project Site. Other portions of the Project Substation site are less disturbed; however, minor earth movement, vehicle tracks, and trash can be found throughout the area.

Wildlife

Wildlife resources that have the potential of occurrence within the vicinity of the Project are predominantly associated with Sonoran Desert Scrub habitats. Species occurrence, abundance, and distribution are strongly influenced by the presence of surface water, topography, and habitat types within and surrounding the area. The area is dominated by the Hassayampa Switchyard and associated transmission lines, much of which is disturbed, with small areas of disturbed native habitats. **Tables D-2, D-3, and D-4** present common mammals, birds, reptiles and amphibians that have potential to occur or have been recorded in the vicinity of the Project.

During the field survey, one turkey vulture (*Cathartes aura*), two Gambel's quail (*Callipepla gambelii*), and five common side-blotched lizards (*Uta stansburyana*) were observed on the Project Site.

Wildlife habitat on the Project Site is limited to Sonoran Desert Scrub. The site is flat, with sandy soils, little surface rock, and no rock outcrops, natural washes, riparian vegetation, or other special or unique habitat features. The site is expected to provide low quality habitat for most wildlife species because of past disturbance to the vegetation and because it is subject to substantial human disturbance from the adjacent, well-traveled Elliot Road and Hassayampa Switchyard.

There are no trees that could provide nesting opportunities for raptors or other birds, or roosting opportunities for bats. There are no features such as caves, mines, or buildings that could provide roosting opportunities for bats. The adjacent transmission lines may provide nesting or roosting opportunities for raptors; however, no nests were observed on these structures. No bird nests were observed in the creosote bush, cacti, other shrubs, or on the ground on the site. A number of small (2 inches or less in diameter) rodent burrows were observed. Many of these are located under creosote bush or other shrubs, which may indicate they are occupied by *Dipodomys* (kangaroo rat) spp.; however, no mammals were observed. There are also a number of mid-sized burrows on the site. None of these showed signs of recent occupancy; most were collapsed and the remainder were occupied by live vegetation, spider webs, or other indicators of non-use. Measurement of these burrows was complicated by their poor condition, but most appeared to be 6 inches or less in width and round in cross section, suggestive of past use by the desert cottontail (*Sylvilagus audubonii*). No other wildlife was observed.

POTENTIAL EFFECTS

The Gen-tie Line route would follow existing features; therefore, most ground disturbance and modifications would occur within previously disturbed land resulting in negligible impacts. The Project Substation would be built on less disturbed land but would also result in negligible impacts.

There would also be a slight increased risk of bird collisions related to the very short Gen-tie Line from the Project Substation to the existing Hassayampa Switchyard. To minimize the risk of collisions, the lines will be constructed following industry standards aimed at reducing avian collisions (APLIC 2006).

Table D-1
Common Plant Species
Potential Occurrence in Native Habitats in the Vicinity of the Project Site¹

Common Name	Scientific Name	Ecosystem
Triangleleaf bursage	<i>Ambrosia deltoidea</i>	Sonoran Desertscrub, Sonoran Riparian
White bursage	<i>Ambrosia dumosa</i>	Sonoran Desertscrub
Fiddlehead	<i>Amsinckia intermedia</i>	Sonoran Riparian
Purple three-awn	<i>Aristida purpurea</i>	Sonoran Desertscrub
Four-wing saltbush	<i>Atriplex canescens</i>	Sonoran Desertscrub
All scale	<i>Atriplex polycarpa</i>	Sonoran Desertscrub
Foothill paloverde	<i>Cercidium microphyllum</i>	Sonoran Riparian
Datura	<i>Datura stramonium</i>	Sonoran Riparian
Englemann's hedgehog cactus	<i>Echinocereus englemannii</i>	Sonoran Desertscrub
Brittlebush	<i>Encelia farinosa</i>	Sonoran Desertscrub, Sonoran Riparian
Skeletonweed	<i>Eriogonum deflexum</i>	Sonoran Desertscrub
Filaree	<i>Erodium cicutarium</i>	Sonoran Desertscrub
Barrel cactus	<i>Ferocactus wislizenii</i>	Sonoran Desertscrub
Ocotillo	<i>Fouquieria splendens</i>	Sonoran Desertscrub
Rhatany	<i>Krameria parviflora</i>	Sonoran Desertscrub, Sonoran Riparian
Creosote bush	<i>Larrea tridentata</i>	Sonoran Desertscrub, Sonoran Riparian
Wolfberry	<i>Lycium spp.</i>	Sonoran Desertscrub, Sonoran Riparian
Little fishhook cactus	<i>Mammillaria thornberi</i>	Sonoran Desertscrub
Teddybear cholla	<i>Opuntia bigelovii</i>	Sonoran Desertscrub
Prickly pear cactus	<i>Opuntia engelmannii</i>	Sonoran Desertscrub
Jumping cholla	<i>Opuntia fulgida</i>	Sonoran Desertscrub
Desert mistletoe	<i>Phoradendron californicum</i>	Sonoran Desertscrub
Galleta grass	<i>Pleuraphis jamesii</i>	Sonoran Desertscrub, Sonoran Riparian
Arrowweed	<i>Pluchea sericea</i>	Sonoran Riparian
Mesquite	<i>Prosopis spp.</i>	Sonoran Riparian
Bladdersage	<i>Salazaria mexicana</i>	Sonoran Desertscrub
Russian thistle	<i>Salsola iberica</i>	Sonoran Desertscrub, Sonoran Riparian
London rocket	<i>Sisymbrium irio</i>	Sonoran Desertscrub, Sonoran Riparian
Globe mallow	<i>Sphaeralcea spp.</i>	Sonoran Desertscrub, Sonoran Riparian
Saltcedar/Tamarisk	<i>Tamarix ramosissima</i>	Sonoran Riparian

¹Brown1994

Table D-2
Mammal Species
Potential Occurrence in the Vicinity of the Project Site¹

Common Name	Scientific Name
Harris' antelope squirrel	<i>Ammospermophilus harrisi</i>
Pallid bat	<i>Antrozous pallidus</i>
Ringtail	<i>Bassariscus astutus</i>
Coyote	<i>Canis latrans</i>
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>
Desert kangaroo rat	<i>Dipodomys deserti</i>
Merriam's kangaroo rat	<i>Dipodomys merriami</i>
Big brown bat	<i>Eptesicus fuscus</i>
Spotted bat	<i>Euderma maculatum</i>
Western mastiff bat	<i>Eumops perotis</i>
Mountain lion	<i>Felis concolor</i>
Bobcat	<i>Felis rufus</i>
Hoary bat	<i>Lasiurus cinereus</i>
Southern yellow bat	<i>Lasiurus ega xanthinus</i>
Mexican long-nosed bat	<i>Leptonycteris nivalis</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Hooded skunk	<i>Mephitis macroura</i>
Striped skunk	<i>Mephitis mephitis</i>
House mouse	<i>Mus musculus</i>
California myotis	<i>Myotis californicus</i>
White-throated wood rat	<i>Neotoma albigula</i>
Desert wood rat	<i>Neotoma lepida</i>
Desert shrew	<i>Notiosorex crawfordi</i>
Desert mule deer	<i>Odocoileus hemionus crooki</i>
Southern grasshopper mouse	<i>Onychomys torridus</i>
Collared peccary	<i>Pecari tajacu</i>
Arizona pocket mouse	<i>Perognathus amplus</i>
Bailey's pocket mouse	<i>Perognathus baileyi</i>
Long-tailed pocket mouse	<i>Perognathus formosus</i>
Rock pocket mouse	<i>Perognathus intermedius</i>
Little pocket gopher	<i>Perognathus longimembris</i>
Desert pocket mouse	<i>Perognathus penicillatus</i>
Cactus mouse	<i>Peromyscus eremicus</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Western pipistrelle	<i>Pipistrellus Hesperus</i>
Raccoon	<i>Procyon lotor</i>
Western harvest mouse	<i>Reithrodontomys megalotis</i>
Arizona gray squirrel	<i>Sciurus arizonensis</i>

Table D-2
Mammal Species
Potential Occurrence in the Vicinity of the Project Site¹

Common Name	Scientific Name
Arizona cotton rat	<i>Sigmodon arizonae</i>
Round-tailed ground squirrel	<i>Spermophilus tereticaudus</i>
Rock squirrel	<i>Spermophilus variegatus</i>
Western spotted skunk	<i>Spilogale gracilis</i>
Desert cottontail	<i>Sylvilagus audubonii</i>
American free-tailed bat	<i>Tadarida brasiliensis</i>
Pocketed free-tailed bat	<i>Tadarida femorosacca</i>
Big free-tailed bat	<i>Tadarida macrotis</i>
Badger	<i>Taxidea taxus</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Kit fox	<i>Vulpes macrotis</i>
Red fox	<i>Vulpes vulpes</i>

¹Hoffmeister 1986.

**Table D-3
Bird Species
Potential Occurrence in the Vicinity of the Project Site¹**

Common Name	Scientific Name
Cooper's Hawk	<i>Accipiter cooperii</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Sage Sparrow	<i>Amphispiza belli</i>
Black-throated Sparrow	<i>Amphispiza bilineata</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Mallard	<i>Anas platyrhynchos</i>
Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Great Egret	<i>Ardea alba</i>
Great Blue Heron	<i>Ardea herodias</i>
Western Burrowing Owl	<i>Athene cunicularia hypugaea</i>
Verdin	<i>Auriparus flaviceps</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Great Horned Owl	<i>Bubo virginianus</i>
Cattle Egret	<i>Bubulcus ibis</i>
Zone-tailed Hawk	<i>Buteo albonotatus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Green Heron	<i>Butorides virescens</i>
Lark Bunting	<i>Calamospiza melanocorys</i>
Gambel's Quail	<i>Callipepla gambelii</i>
Anna's Hummingbird	<i>Calypte anna</i>
Costa's Hummingbird	<i>Calypte costae</i>
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Pyrrhuloxia	<i>Cardinalis sinuatus</i>
Lesser Goldfinch	<i>Carduelis arealtria</i>
House Finch	<i>Carpodacus mexicanus</i>
Turkey Vulture	<i>Cathartes aura</i>
Killdeer	<i>Charadrius vociferus</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Lesser Nighthawk	<i>Chordeiles acutipennis</i>
Northern Harrier	<i>Circus cyaneus</i>
Red-shafted Northern Flicker	<i>Colaptes cafer</i>
Gilded Flicker	<i>Colaptes chrysoides</i>
Rock Dove	<i>Columba livia</i>
Inca Dove	<i>Columbina inca</i>
Common Ground-dove	<i>Columbina passerina</i>

**Table D-3
Bird Species
Potential Occurrence in the Vicinity of the Project Site¹**

Common Name	Scientific Name
Western Wood-pewee	<i>Contopus sordidulus</i>
Common Raven	<i>Corvus corax</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>
Yellow Warbler	<i>Dendroica petechia</i>
Snowy Egret	<i>Egretta thula</i>
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>
Dusky Flycatcher	<i>Empidonax oberholseri</i>
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Horned Lark	<i>Eremophila alpestris</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Prairie falcon	<i>Falco mexicanus</i>
American Kestrel	<i>Falco sparverius</i>
Greater Roadrunner	<i>Geococcyx californianus</i>
Blue Grosbeak	<i>Guiraca carulea</i>
Cliff Swallow	<i>Hirundo pyrrhonota</i>
Barn Swallow	<i>Hirundo rustica</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Bullock's Oriole	<i>Icterus bullockii</i>
Hooded Oriole	<i>Icterus cucullatus</i>
Scott's Oriole	<i>Icterus parisorum</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Western Screech-owl	<i>Megascops kennicottii</i>
Gila Woodpecker	<i>Melanerpes uropygialis</i>
Lincoln's Sparrow	<i>Melospiza lincolnii</i>
Song Sparrow	<i>Melospiza melodia</i>
Elf Owl	<i>Micrathene whitneyi</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Bronzed Cowbird	<i>Molothrus aeneus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Brown-crested Flycatcher	<i>Myiarchus tyrannulus</i>
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>
MacGillivray's Warbler	<i>Oporornis tolmiei</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>
Western Screech Owl	<i>Otus kennicottii</i>
Harris's Hawk	<i>Parabuteo unicinctus</i>

**Table D-3
Bird Species
Potential Occurrence in the Vicinity of the Project Site¹**

Common Name	Scientific Name
House Sparrow	<i>Passer domesticus</i>
Blue Grosbeak	<i>Passerina caerulea</i>
Phainopepla	<i>Phainopepla nitens</i>
Common Poorwill	<i>Phalaenoptilus nuttallii</i>
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Ladder-backed Woodpecker	<i>Picoides scalaris</i>
Abert's Towhee	<i>Pipilo aberti</i>
Green-tailed Towhee	<i>Pipilo chlorurus</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Canyon Towhee	<i>Pipilo fuscus</i>
Western Tanager	<i>Piranga ludoviciana</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Black-tailed Gnatcatcher	<i>Polioptila melanura</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Vermillion Flycatcher	<i>Pyrocephalus rubinus</i>
Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Rock Wren	<i>Salpinctes obsoletus</i>
Black Phoebe	<i>Sayornis nigricans</i>
Say's Phoebe	<i>Sayornis saya</i>
Rufus Hummingbird	<i>Selasphorus rufus</i>
Western Bluebird	<i>Sialia mexicana</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Chipping Sparrow	<i>Spizella passerine</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Western Meadowlark	<i>Sturnella neglecta</i>
European Starling	<i>Sturnus vulgaris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Bendire's Thrasher	<i>Toxostoma bendirei</i>
Crissal Thrasher	<i>Toxostoma crissale</i>
Curve-billed Thrasher	<i>Toxostoma curvirostre</i>
Le Conte's Thrasher	<i>Toxostoma lecontei</i>
House Wren	<i>Troglodytes aedon</i>
American Robin	<i>Turdus migratorius</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Cassin's Kingbird	<i>Tyrannus vociferans</i>
Barn Owl	<i>Tyto alba</i>

Common Name	Scientific Name
Orange-crowned Warbler	<i>Vermivora celata</i>
Lucy's Warbler	<i>Vermivora luciae</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Virginia's Warbler	<i>Vermivora virginiae</i>
Bell's Vireo	<i>Vireo bellii</i>
Warbling Vireo	<i>Vireo gilvus</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
White-winged Dove	<i>Zenaida asiatica</i>
Mourning Dove	<i>Zenaida macroura</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>

¹Corman and Wise-Gervais 2005; Glinski 1998.

**Table D-4
Reptile and Amphibian Species
Potential Occurrence in the Vicinity of the Project Site¹**

Common Name	Scientific Name
Arizona glossy snake	<i>Arizona elegans noctivaga</i>
Sonoran desert toad	<i>Bufo alvarius</i>
Great plains toad	<i>Bufo cognatus</i>
Red-spotted toad	<i>Bufo punctatus</i>
Zebra tail lizard	<i>Callisaurus draconoides</i>
Banded sand snake	<i>Chilomeniscus cinctus</i>
Western shovel-nosed snake	<i>Chionactis occipitalis</i>
Gila spotted whiptail	<i>Cnemidophorus flagellicaudus</i>
Western whiptail	<i>Cnemidophorus tigris</i>
Desert banded gecko	<i>Coleonyx variegatus variegatus</i>
Western diamondback rattlesnake	<i>Crotalus atrox</i>
Sonoran sidewinder	<i>Crotalus cerastes cercobombus</i>
Speckled rattlesnake	<i>Crotalus mitchellii pyrrhus</i>
Black-tailed rattlesnake	<i>Crotalus molossus</i>
Mojave rattlesnake	<i>Crotalus scutulatus</i>
Arizona black rattlesnake	<i>Crotalus viridis cerberus</i>
Common collared lizard	<i>Crotaphytus collaris</i>
Western collared lizard	<i>Crotaphytus collaris baileyi</i>
Desert iguana	<i>Dipsosaurus dorsalis</i>
Large spotted leopard lizard	<i>Gambelia wislizenii wislizenii</i>
Desert tortoise	<i>Gopherus agassizii</i>
Gila monster	<i>Heloderma suspectum</i>
Canyon tree frog	<i>Hyla arenicolor</i>
Night snake	<i>Hypsiglena torquata</i>
Sonoran mud turtle	<i>Kinosternon sonoriense</i>
Common kingsnake	<i>Lampropeltis getula</i>
Western blind snake	<i>Leptotyphlops humilis</i>
Rosy boa	<i>Lichanura trivirgata</i>
Red coachwhip	<i>Masticophis flagellum piceus</i>
Arizona coral snake	<i>Micruroides euryxanthus</i>
Desert horned lizard	<i>Phrynosoma platyrhinos</i>
Desert horned lizard	<i>Phrynosoma platyrhinos calidiarum</i>
Regal horned lizard	<i>Phrynosoma solare</i>
Saddled leaf-nosed snake	<i>Phyllorhynchus browni</i>
Western leaf-nosed snake	<i>Phyllorhynchus decurtatus perkinsi</i>
Sonoran gopher snake	<i>Pituphis melanoleucus affinis</i>
Bullfrog	<i>Rana catesbeiana</i>
Western long-nosed snake	<i>Rhinocheilus lecontei lecontei</i>

Table D-4
Reptile and Amphibian Species
Potential Occurrence in the Vicinity of the Project Site¹

Western patch-nosed snake	<i>Salvadora hexalepis</i>
Western chuckwalla	<i>Sauromalus obesus obesus</i>
Couch spadefoot	<i>Scaphiopus couchi</i>
Western spadefoot	<i>Scaphiopus hammondi</i>
Southern spadefoot	<i>Scaphiopus multiplicatus</i>
Sonoran spiny lizard	<i>Sceloporus magister magister</i>
Yellow-backed spiny lizard	<i>Sceloporus magister uniformis</i>
Ground snake	<i>Sonora semiannulata</i>
SW black-headed snake	<i>Tantilla hobartsmithi</i>
Lyre snake	<i>Trimorphodon biscutatus</i>
Spiny softshell	<i>Trionyx spiniferus</i>
Arizona brush lizard	<i>Urosaurus graciosus shannoni</i>
Tree lizard	<i>Urosaurus ornatus</i>
Side-blotched lizard	<i>Uta stansburiana</i>

¹Stebbins 1985.

REFERENCES

- Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines – The State of the Art in 2006. Located at [http://www.aplic.org/SuggestedPractices2006\(LR-2watermark\).pdf](http://www.aplic.org/SuggestedPractices2006(LR-2watermark).pdf). Accessed June 20, 2008.
- Brown D.E. 1994. Biotic Communities: Southwestern United States and Northwestern Mexico. University of Utah Press. Provo, Utah.
- Corman, T. and C. Wise-Gervais (editors). 2005. Arizona Breeding Bird Atlas. University of New Mexico Press. Albuquerque, New Mexico. 636 pp.
- Glinski, R.L. Ed. 1998. The Raptors of Arizona. The University of Arizona Press, Tucson, and the Arizona Game and Fish Department, Phoenix. Pp. 46-49.
- Hoffmeister, D.F. 1986. Mammals of Arizona. University of Arizona Press.
- Stebbins, R.C. 1985. A Field Guide to Western Reptiles and Amphibians. Peterson Field Guides.

Exhibit E

EXHIBIT E

SCENIC AREAS, HISTORIC SITES AND STRUCTURES, ARCHAEOLOGICAL SITES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon.”

VISUAL RESOURCES

The Sun Streams Gen-tie Project would interconnect the proposed Sun Streams PV solar generating facility to the 500 kV Hassayampa Switchyard. It would consist of a new 500 kV Gen-tie Line approximately 0.3 miles in length originating at the Project Substation located on the solar facility site.

Existing Conditions

The general area is located in the Basin and Range Lowlands Province. The landscape of the general area is characterized by a broad alluvial basin created by the Gila River, and is bounded by mountainous terrain in the background. The area surrounding the proposed location of the Project is highly developed with multiple existing transmission lines and substations. **Figure E-1** shows an existing photograph of the proposed right-of-way (ROW) for the Gen-tie Line taken from the proposed Project Substation looking west toward the Hassayampa Switchyard.

Visual resources consist of the landforms, vegetation, rock and water features, and cultural modifications that create the visual character and sensitivity of a landscape. These factors also contribute to the sensitivity of the landscape to visual change. A number of factors are considered to evaluate the potential effect the Sun Streams Gen-tie Project would have on visual resources and characteristic landscapes including Visual Quality, Viewer Concern, Viewer Exposure, and Overall Visual Sensitivity.

Visual Quality (VQ) is a measure of the overall impression or appeal of an area as determined by the particular landscape characteristics such as landforms, rockforms, water features, and vegetation patterns, as well as associated public values. The attributes of variety, vividness, coherence, uniqueness, harmony, and pattern contribute to visual quality classifications of indistinctive (low), common (moderate), and distinctive (high). VQ in the Project area is low to moderate because of the presence of the existing energy infrastructure (substations and transmission lines).

Viewer Concern (VC) addresses the level of interest or concern of viewers regarding an area's visual resources and is closely associated with viewers' expectations for the area. VC reflects the importance placed on a given landscape based on the human perceptions of the intrinsic beauty of the existing landforms, rockforms, water features, vegetation patterns, and even

cultural features. VC is low in this area because much of it is already developed for industrial uses (energy infrastructure).

Viewer Exposure (VE) describes the degree to which viewers are exposed to views of the landscape. Viewer exposure considers landscape visibility (the ability to see the landscape), distance zones (proximity of viewers to the subject landscape), number of viewers, and the duration of view. Landscapes are generally subdivided into three or four distance zones based on relative visibility from travel routes or observation points. Distance zones typically include foreground, middle-ground, and background. The viewer exposure to the Project is moderate because, while along a public road (Elliott Road), it receives relatively little traffic and most of its travelers use it to access the energy facilities in the vicinity. The nearest residence is approximately 1.7 miles from the Project.

Overall Visual Sensitivity is a concluding assessment derived from a comparison of existing visual quality, viewer concern, and viewer exposure. Visual Sensitivity is classified as low, moderate, or high, and would be deemed low for this Project area because of the significant existing industrial / electric infrastructure development in the area. The types and degree of visual changes that would be caused by the Project are shown in a photographic simulation described below.

Potential Effects on Scenic Quality

Effects to visual resources from the development of the Project will result in very minor changes to the views in the immediate vicinity. The proposed Gen-tie Line will introduce new elements into the landscape, but will not appreciably alter the existing form, line, color, and texture which characterize the existing landscape. This is because of the significant amount of existing electric infrastructure that occurs in the area (see **Figure E-1**).

The Gen-tie Line would include structures up to 170 feet tall between the Project Substation and the Hassayampa Switchyard located 0.3 miles west. These Project structures could be seen by viewers travelling along Elliot Road but would be indistinguishable from all of the other existing transmission structures in the immediate area.

Areas within the Project Substation would be artificially lighted at night as necessary to enhance the safety of Project personnel. Any night-lighting would be designed to meet the requirements of Maricopa County.

The Federal Aviation Administration (FAA) requires that any permanent object that exceeds an overall height of 200 feet above ground level or exceeds any obstruction standard contained in FAR Part 77 (Special Federal Aviation Regulation No. 98 available at: http://edocket.access.gpo.gov/cfr_2007/janqtr/pdf/14cfr77.1.pdf) be lighted with a flashing lighting system. Because the tallest structures associated with the Project would only be up to 170 feet tall and more than three nautical miles from the nearest airport (as per FAR Part 77), blinking safety lights would not be needed.

Key Viewpoints

Because of the small size of the Gen-tie Line (0.3 miles), one key observation point (KOP) was selected to illustrate a representative view of the Project. The location of the KOP is depicted on **Figure E-2**. This KOP provides a view from Elliot Road travelling westward, the primary location from which members of the public could potentially see the Gen-tie Project. There are no potential viewing points west of the Project from which significant numbers of individuals could see it, because views from that direction would be blocked by the Hassayampa Switchyard.

Figure E-3a and **E-3b** shows the existing conditions and photographic simulation of the proposed Gen-tie Line and Project Substation from a location on Elliot Road approximately 0.1 miles east of the Project Substation. This view represents the closest view from which a west-bound traveler on Elliot Road could see both the Project Substation and Gen-tie Line.

Existing land uses visible in this view are Elliot Road in the foreground, the multiple existing transmission lines and the Hassayampa Switchyard in the middleground, and distant mountains in the background. As depicted on the simulation, the proposed Project Substation would be visible in the foreground and middleground and the Gen-tie Line would be visible in the middleground, but difficult to distinguish from the other existing transmission structures and the Hassayampa Switchyard that dominate the view.

CULTURAL RESOURCES

The Sun Streams Gen-tie Line would cross about 0.3 miles of private lands and the Project Substation would disturb up to 5 acres of private land that has for several decades undergone intermittent disturbance associated with construction and maintenance of the extensive, proximate electric and gas line infrastructure. Based on current inventories, archaeological and historical overviews, and previous surveys in the area, the proposed Project Site is expected to contain few, if any, prehistoric or historic cultural resources.

A Class I cultural resources survey was conducted wherein site and project files were checked at the Arizona State Museum (ASM) and the data received were examined to determine if previously recorded cultural resources were within the Project Site and a one-mile buffer. The ASM records check revealed that several (12) cultural resource surveys have been conducted in the area. Four of these surveys included portions of the Gen-tie Project area and no sites had been recorded. A copy of the Class I Report is included in **Appendix E-1**.

A Class III cultural resources survey was conducted on the Gen-tie Project site (Gen-tie Line route and Project Substation). The survey identified two historic sites—an un-named dirt road and a trash dumping area—and 15 isolates. No buildings, structures, or districts were identified. Both sites represent extensions of previously documented sites located beyond the limits of the Project area.

Both sites are recommended as not eligible for National Register listing because of a lack of information potential. No further work is recommended for these sites.

Consultation letters were sent to the State Historic Preservation Office (SHPO) and local Native American tribes along with the cultural report seeking comment. These letters are included in **Appendix E-2**.

CONCLUSIONS

The Sun Streams Gen-tie Project will cover a very small area in a location where much significant electrical infrastructure (transmission lines and substations) already exists. Where the Project would be visible, it will be consistent with the other existing electric facilities in the area.

There are no known historic sites or structures or archaeological sites that would be affected by the proposed Sun Streams Gen-tie Project. The past disturbance activities on the Project Site limit the potential for archaeological resources to be present.

REFERENCES

References for the cultural resources survey are included in the Class I Cultural Resources Report.

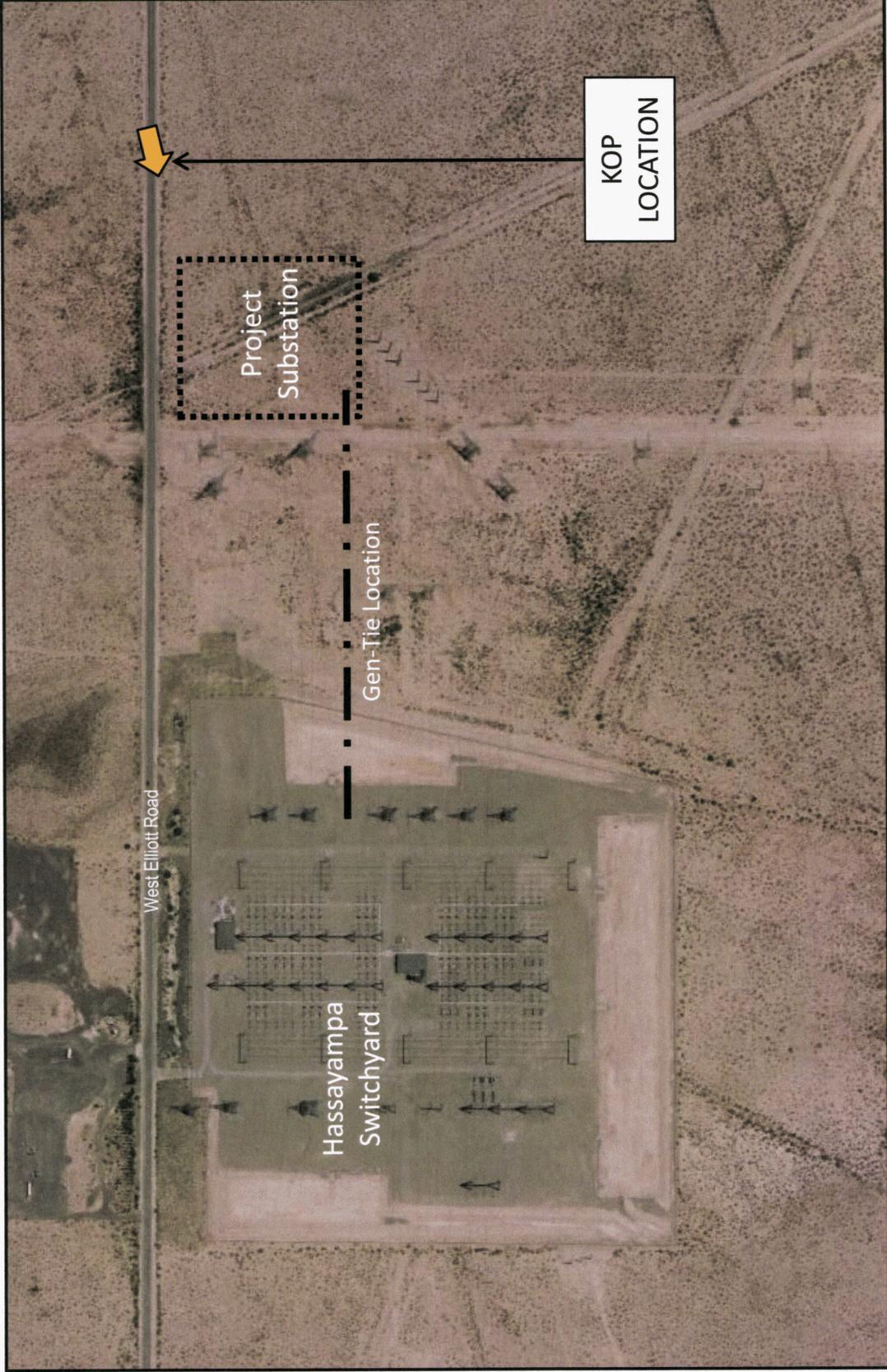


Figure E-1
Sun Streams Gen-Tie Project
KOP Location



Figure E-2
View of Existing Condition of Sun Streams Gen-Tie Route
Looking West from Project Substation Location to Hassayampa Switchyard



Figure E-3a
Existing View of Sun Streams Gen-tie Location
Looking West – Southwest from West Elliott Road



Figure E-3b
Visual Simulation of Sun Streams Gen-tie Project
Looking West – Southwest from West Elliott Road

Appendix E-1 – Cultural Report



A CLASS III CULTURAL
RESOURCES SURVEY
FOR THE SUN STREAMS
GEN-TIE PROJECT

MARICOPA COUNTY, ARIZONA

PREPARED BY

PATRICIA T. MITCHELL, M.A., RPA
SENIOR PROJECT ARCHAEOLOGIST

APRIL 2014

KP ENVIRONMENTAL, INC.
2160 OXFORD AVE
CARDIFF BY THE SEA, CA
92007

SHPO REPORT ABSTRACT

Report Title: A Class III Cultural Resources Survey for the Sun Streams Gen-Tie Project, Maricopa County, Arizona

Report Date: April 2014

Agencies: Arizona State Historic Preservation Office (SHPO)

Project Number: Pending

Land Jurisdiction: Private

Project Funding: Private

Project Description: Sun Streams, LLC is proposing construction of the Sun Streams Gen-Tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams Solar Project substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This gen-tie project would be approximately 0.3 miles long. kp environmental, Inc. was tasked with performing a Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility.

KPE Project Name: Sun Streams Gen-Tie Project

Location: The project is located approximately 4 miles northwest of Arlington and approximately 7.5 miles south of Interstate 10 in Maricopa County. The legal location is in the NW 1/4 of Section 14, in Township 1 South and Range 6 West from the Gila and Salt River Base Line and Meridian, as depicted on the Arlington (1984) Arizona 7.5-minute United States Geological Survey topographic quadrangle.

Acreage: Approximately 16 acres

Date(s) of Field Survey: March 14, 2014

Number of Sites: 2

National Register of Historic Places-eligible Properties: 0

National Register of Historic Places-ineligible Properties: 2: SS-H-1/AZ T:9:55 (ASM) and AZ T:9:63 (ASM)

Management Recommendations: Two sites were identified, along with 14 IOs. Site SS-H-1 represents one of the trash dumping areas that is likely associated with adjacent site AZ T:9:55 (ASM), a farm labor camp. AZ T:9:63 (ASM) is an unnamed dirt road that dates to the early 1900s. Both sites are recommended as not eligible for National Register listing because of a lack of information potential. No further work is recommended for these sites. Additionally, 13 of the 14 IOs recorded during the course of the survey are recommended as not eligible for NRHP listing because they are objects lacking historical significance. There is only one artifact of note that requires additional research at this time. Isolate 14 (IO 14), a large green stone - possibly a trail marker.

Given the results of the survey, with the exception of IO 14, it is recommended that no additional cultural resource investigations would be necessary prior to the development of substation and Gen-Tie.

If previously unidentified cultural resources should be discovered during construction, the contractor must stop work immediately and take all reasonable steps to secure the preservation of those resources. The Arizona State Museum (ASM) should be notified to make arrangement for the appropriate assessment and treatment of those resources. If any human remains or funerary objects are unexpectedly discovered, they should be reported to the director of the ASM in accordance with A.R.S. § 41-865.

ACRONMYNS

ACC	Arizona Corporation Commission
ARS	Arizona Revised Statutes
Gen-Tie	Generation-tie line
GLO	General Land Office
GPS	Global Positioning Systems
KPE	kp environmental, Inc.
MNA	Museum of Northern Arizona
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
ROW	Right-of-Way
SHPO	State Historic Preservation Officer
USDI	U.S. Department of the Interior
USGS	United States Geological Survey

Table of Contents

SHPO REPORT ABSTRACT.....	i
ACRONYMS	iii
1.0 PROJECT DESCRIPTION.....	1
2.0 ENVIRONMENTAL CONTEXT	2
3.0 CULTURAL CONTEXT	6
4.0 PREVIOUS RESEARCH.....	14
5.0 SURVEY EXPECTATIONS.....	18
6.0 SURVEY METHODS.....	19
7.0 SURVEY FINDINGS AND ASSESSMENT OF EFFECT	20
8.0 MANAGEMENT SUMMARY AND RECOMMENDATIONS.....	23
9.0 REFERENCES CITED.....	24
10.0 CONFIDENTIAL APPENDICES - TABULAR DATA.....	
11.0 CONFIDENTIAL APPENDICES - MAPS	

Tables

1 Previous Investigations	15
2 Previously Recorded Resources	15
3 Newly Recorded and Updated Resources	21

Figures

1 Regional Map	2
2 Project Location	3
3 Western Substation Area - Vegetation	6
4 Eastern Substation Area - Vegetation	6
5 Gen-Tie Area - Vegetation	7
6 <i>Echinocereus engelmannii</i> in Gen-Tie Area	7
7 Eastern Substation plants	8
8 Pushpile in Substation Area	8
9 1916 GLO Map, T1 S/R6 W	15
10 Previously Recorded Archaeological Resources	Confidential
11 Newly Recorded and Updated Resources (topo)	Confidential
12 Newly Recorded and Updated Resources (aerial)	Confidential
13 Trail Marker (?) IO No. 14	26
14 Metate IO No. 13	26

1.0 PROJECT DESCRIPTION

1.1 Introduction

Sun Streams, LLC is proposing construction of the Sun Streams Gen-Tie Project, a short 500 kV generation-tie (gen-tie) line interconnecting the Sun Streams Solar Project to the adjacent Hassayampa Switchyard near Arlington, Arizona. This gen-tie project would be approximately 0.3 miles long and located in Maricopa County approximately 3.5 miles southeast of Wintersburg, approximately 10 miles southeast of Tonopah, and approximately 14 miles west of Buckeye, Arizona (Figure 1). The proposed Sun Streams Solar Project would be developed using photovoltaic (PV) technology. The Project Substation and the Gen-Tie Line are the subject of this report, is referred to herein as the "Project."

1.2 Project Location and Description

The legal description for the Project area, which is on private land, is located in the northwest 1/4 of Section 14 in Township 1 South and Range 6 West as depicted on the Arlington (1984), Arizona 7.5' United States Geological Survey (USGS) topographic quadrangle (Gila and Salt River Base Line and Meridian) (Figure 2).

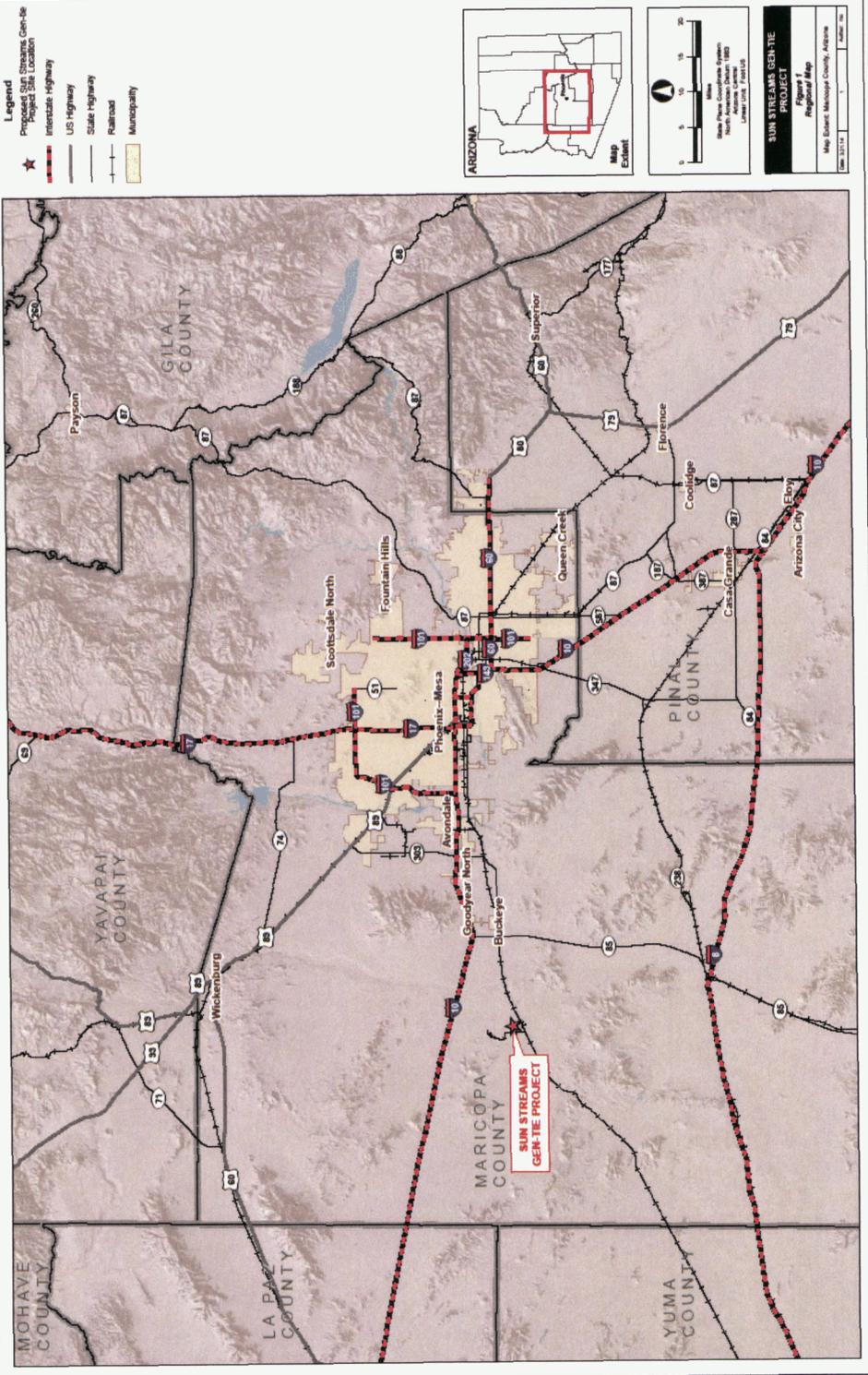
The proposed 0.3 mile-long 500 kV Sun Streams Gen-Tie Line and connecting substation is proposed to be constructed directly east of the existing Hassayampa Switchyard. Access to the Project area will be from Elliot Road.

1.3 Regulatory Context

The Project is privately funded and on private land; however, approval by the Arizona Corporation Commission (ACC) will be required per Arizona Revised Statutes (A.R.S.) Title 40 for this stage of the overall Sun Streams Solar Energy Project. Because the project will require approval by a state agency, it will require compliance with the Arizona State Historic Preservation Act of 1982 (A.R.S. § 41-861 through 41-864), which stipulates that state agencies work to identify and preserve significant historic properties and provide the Arizona State Historic Preservation Office (SHPO) an opportunity to comment on any agency plans that affect properties listed in or eligible for listing in the Arizona State Register of Historic Places. Sun Streams LLC. will provide a copy of the cultural resources survey report to the SHPO for review.

The National Register of Historic Preservation (NRHP) criteria are designed to guide federal agencies and others in evaluating whether a property is eligible for inclusion on the NRHP. To be eligible for listing in the NRHP, a cultural resource must meet one of the four criteria defined by Title 36, Part 60, of the Code of Federal Regulations (36 CFR 60), which reads as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and:



- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that has yielded, or may be likely to yield, information important in prehistory or history.

In addition to these four criteria, there is a general stipulation that the property be 50 years old or older (for exceptions, see 36 CFR 60.4, Criteria Considerations). The importance of information that a property may yield is measured by its relevance to identified research questions that can be addressed through the analysis of particular property types. In addition to research potential, the cultural resources of Native Americans, Euroamericans, and other ethnic communities may possess public and ethnic value. Finally, cultural resources may also have broader public significance, such as serving to educate the public about important aspects of national, state, and local history and prehistory.

2.0 ENVIRONMENTAL CONTEXT

The Project area is located within the Lower Gila River Basin of the Basin and Range physiographic province of southern Arizona. This province is characterized by a series of NW/SE-trending mountain ranges separated by alluvial valleys. The Middle Gila River Basin, which extends from Coolidge Dam to Gillespie Dam and contains a wide, gently sloping alluvial plain surrounded by low fault-block mountains and hills. The Buckeye Hills are approximately 5 miles to the east, the Gila Bend Mountains approximately 5 miles to the south, the Palo Verde Hills approximately 5 miles to the northwest, Saddle Mountain approximately 12 miles to the northwest, and the White Tank Mountains approximately 20 miles to the northeast.

There are no known permanent sources of water in the immediate vicinity of the project area; however, the nearest reliable water sources are the Gila and Hassayampa Rivers, approximately 5 miles to the southeast and east, respectively.

The Project area is primarily flat desert terrain. A clear division in the vegetation occurs between the western edge and eastern part of the substation component; this appears to be the result of a natural wash in the western edge that has given plant life the opportunity to flourish (Figures 3 and 4). The Gen-Tie component is primarily flat desert terrain (Figure 5).

The vegetation for the Gen-Tie and the substation parcels are very similar. Cacti are noticeably sparse. Only two cacti were observed (both were *Echinocereus engelmannii*, Engelmann hedgehog or strawberry cactus), one flowering in the Gen-Tie parcel (Figure 6), and one in the substation parcel (non-flowering). The eastern end of the substation parcel of the Project area is undeveloped and retains its natural vegetation, mainly a healthy stand of creosote mixed with other native plants (Figure 7). Another prominent feature in the western side of the substation parcel is a pushpile of backdirt, approximately 25 feet long, which extends just off the dirt access road to the northeast (Figure 8).

Smaller washes in the area may have provided seasonal sources of water. Centennial Wash and several smaller tributaries such as Luke Wash, Winters Wash, Phillips Wash, and Fourmile Wash are within 10 miles of the project area. Given the remote and arid setting, permanent habitation sites are unlikely, although temporary camps and resource procurement sites may be present in the Project area. There are rock-lined pathways and intaglios documented on the surrounding buttes and these may have been associated with ceremonial activity and prehistoric travel routes through the region (Christenson 2008; Lundin 2010a).



Figure 3. Western Substation Area - Vegetation, Facing West



Figure 4. Eastern Substation Area - Vegetation, Facing Down



Figure 5. Gen-Tie Area - Vegetation, Facing West



Figure 6. *Echinocereus engelmannii* in Gen-Tie Area, Facing Down



Figure 7. Substation plants, Facing East



Figure 8. Pushpile in Substation Area, Facing Northeast

3.0 CULTURAL CONTEXT

3.1 Introduction

The generally accepted culture history of the Project area shows that human utilization of Southern Arizona spans the last 11,500 years. Nine main chronological periods (Paleo-Indian, Archaic, Early Formative, Pioneer, Colonial, Sedentary, Classic, Protohistoric, and Historic) have been archaeologically recognized, and each is characterized by different social and cultural attributes. More detailed overviews can be found in Bayman 2001; Berry and Marmaduke 1982; Bilsbarrow and Palus 1997; Bronitsky and Merritt 1986; Craig and Hackbarth 1997; Crown and Judge 1991; Deaver and Altschul 1994; Fish 1989; Fish and Fish 2008; Gilpin and Phillips 1998; Gumerman 1991; Haynes 1986; Janus 1989; Marmaduke 1993; Myrick 1980; Russell 1975; Spier 1970; Whittlesey et al. 1994; Wright 2002; and Wright et al. 2002.

Bilsbarrow and Palus (1997); Craig and Hackbarth (1997); Deaver and Altschul (1994); Gilpin and Phillips (1998); Haynes (1986); Janus (1989); Marmaduke (1993); Myrick (1980); Russell (1975); Spier (1970); Whittlesey et al. (1994); Wright (2002); Wright et al. (2002).

3.2 Paleo-Indian

The earliest known record of human habitation in Arizona's desert regions dates to approximately 12,000 years (Haury 1950). These Paleoindian hunters-gatherers were highly mobile, and surface cultural remains associated with their habitation and subsistence sites are rare, as Paleoindian cultural materials are often buried deep beneath Holocene sedimentary deposits.

The Paleoindian period, approximately 10,000 to 8,500 B.C., is characterized by small, nomadic bands that followed megafauna and gathered wild plants. Sites from this period have been documented in southern Arizona (Cordell 1984; Haury 1950; Haynes 1986; Huckell 1984). The subsistence practices of early hunter-gatherers changed approximately 10,000 to 8,000 B.C. with the extinction of large game, as well as with the environmental changes associated with the Pleistocene/Holocene climatic transition (Guthrie 2006; Martin 1967). The overall lifestyle of the early hunter-gatherers continued into the Archaic period (ca. 8,000 to 200 B.C.), but increased aridity during the early- to mid-Holocene brought about a change in the occurrence of plant species in the Southwest (Van Devender et al. 1987). Many of these drought-tolerant plants, such as mesquite, palo verde, and screwbean pods; saguaro and other cactus fruits; and agave, were exploited by prehistoric peoples. These plants provided a protein-rich food source that supplemented the Archaic diet of small game.

Evidence of occupation during the Paleo-Indian period (ca. 10,000–8,500 B.C.) and Early Archaic periods (ca. 8,500–5,000 B.C.) has been elusive in the middle Gila River area (Huckell 1984a, 1984b).

3.3 Archaic Period

The Early Archaic period, approximately 7,500 to 5,000 B.C., is characterized by a hunting and gathering lifestyle, similar to the preceding Paleoindian period. A major difference however was a climatic drying and warming trend leading to desert conditions, and the disappearance of Pleistocene big game, through natural or human agents. Hunting focused on modern game animals and gathering focused on seasonally available resources, with Archaic groups maintaining a significant degree of residential mobility. As the Archaic period progressed (Middle Archaic, ca. 5,000 to 2,000 B.C.), some populations began to experiment with encouraged plants. Various wild plant resources were encouraged through selective planting or reseeding, weeding of

competitor species, and supplemental watering. Seasonal rounds were generally maintained, with encouraged plant stands being revisited during harvest time. Tools identified during the Archaic period such as metates, manos, and mortars demonstrate a significant focus on processing wild plant foods. Small seasonally occupied villages were present, but larger more permanent villages did not develop until the Late Archaic period.

The Late Archaic, approximately 2,000 B.C. to A.D. 1, is a period of increasing sedentism although group mobility was still maintained to varying degrees. Encouraged plants began to give way to small-scale horticulture, especially with the introduction of domestic cultigens. Maintaining small fields and crops meant increased sedentism, and Late Archaic populations along floodplains and alluvial fans began to assemble into permanent villages. Sites of this type are known from the Tucson area, the Casa Grande area, and the Phoenix area. Experimentation with domestic cultigens from Mexico appeared first in the Tucson area (corn circa. 1,700 to 1,200 B.C.), which is located closer to the source area for these cultigens. Late Archaic villages are deeply buried under alluvium because of their location on floodplains and alluvial fans.

The first definitive evidence of human habitation along the middle Gila River dates to the Middle Archaic period. Recent work (Bubemyre et al. 1998; Neily et al. 1999; Woodson and Davis 2001) has documented Middle Archaic period sites, and numerous surface finds of projectile points that suggest the widespread use of the Phoenix Basin during this time period (Loendorf and Rice 2004). Beginning around 1,500 B.C., during the Late Archaic period, the first agricultural villages were established in the Sonoran Desert, mainly in southern Arizona (Diehl 2003; Mabry 1998; Matson 1991; Sliva 2003). Comparable pre-ceramic semi-sedentary horticultural settlements have not been identified in the middle Gila Valley.

The succeeding Early Ceramic period (approximately A.D. 1–550) is characterized by small seasonally occupied hamlets, and more-widespread use of plain ware pottery in the region. However, pottery was not as widely used as in the later Hohokam occupations, and the range of types produced was comparatively limited (Garraty 2011; Whittlesey and Ciolek-Torrello 1996). Current evidence suggests that specialized pottery production began by around A.D. 450 along in the vicinity of South Mountain (Abbott 2009).

3.4 The Hohokam Sequence

The many antecedents of Hohokam cultural attributes imply in situ development of Hohokam society from earlier, Archaic period populations (Bayman 2001; Cable and Doyel 1987; Doyel 1991; Wallace 1997; Wallace et al. 1995; Wilcox 1979). The Hohokam sequence begins with the Pioneer period (ca. A.D. 55–/650–700), which is marked by the introduction of decorated pottery (Ciolek-Torrello 1995; Wallace et al. 1995; Whittlesey 1995). Over the next five centuries, residents the middle Gila River valley manufactured decorated pottery on a large scale and supplied it throughout the Phoenix Basin, including the Salt River valley to the north (Abbott 2009:552). The Hohokam tradition initially appeared in the Phoenix Basin and was characterized by the development of large-scale irrigation agriculture, red-on-buff pottery, a distinctive iconography, exotic ornaments and artifacts, a cremation mortuary complex, and larger as well as more complex settlements (Fish 1989; Howard 2006).

During the Colonial period (ca. A.D. 700–900), villages became more formalized, and groups of houses were arranged around central courtyards (Wilcox et al. 1981). Villages consisted of multiple courtyard groups organized around a large central plaza used for communal gatherings and a cemetery (Abbott and Foster 2003:25; Fish 1989:20; Howard 2006; Wilcox et al. 1981). Larger villages contained ballcourts, which likely

functioned as loci of inter-community ceremonial activities and public gatherings. Agricultural intensification occurred in the subsequent Sedentary period (ca. A.D. 900–1150), a time when marketplaces may have emerged and the ballcourt system reached its maximum extent, with over 230 courts spread across much of central and southern Arizona (Abbott et al. 2007; Abbott 2009; Bayman 2001; Wilcox and Sternberg 1983).

The transition to the Classic period (ca. A.D. 1150–1400) is evidenced archaeologically by various dramatic social, cultural, and economic changes, including changes in burial practices from cremation to inhumation; the replacement of semi-subterranean pit-houses with surface structures and walled compounds; and a shift from a focus on red-on-buff pottery to red wares (Bayman 2001; Crown 1994; Doyel 1974, 1980, 1991). The scale of regional interaction and exchange also contracted drastically at this time (Abbott 2009, 2010; Abbott et al. 2007), governing way to more localized patterns of interaction along the various canal systems and the middle Gila River and lower Salt River valleys (Abbott 2000). This span also witnessed the decline of the extensive ballcourt system, which was replaced by widespread construction of platform mounds in the larger villages (Abbott 2003a, 2006; Abbott et al. 2007; Bayman 2001).

The end of the Classic period around A.D. 1450 is marked by the collapse of the platform mound system and the abandonment of many Hohokam sites along the lower Salt River (Ravesloot et al. 2009). Possible explanations for these dramatic changes include salinization of fields, epidemics, overpopulation, warfare, and various climatic calamities, such as flooding and drought (Abbott 2003b; Bayman 2001; Dean 2000; Ezell 1983; Graybill et al. 2006; Grebinger 1976; Haury 1976; Hegmon et al. 2008; Mindeleff 1897:13; Ravesloot et al. 2009; Redman 1999; Reid and Whittlesey 1997; Wilcox 1991). These explanations are not mutually exclusive, and likely some combination of factors were responsible for these changes.

3.5 Patayan

The Patayan cultural tradition consists of two subgroups: the upland Patayan, which includes the Cohonina, Cerbat, and Prescott cultures, and the lowland Patayan, who occupied the Lower Colorado River Valley. Little is known about this group, in part because few studies have been conducted. Of the previous studies, few have been published (Cordell 1997; McGuire and Schiffer 1982). The site types include habitations, trails, and rock shrines. There is a lack of consensus regarding Patayan ceramic typology and chronology, especially regarding the Patayan I period. The Gila Bend area serves as the eastern boundary for Formative Period Patayan settlement, and the western boundary of Patayan sites extends into California. The eastward expansion of their cultural tradition did not reach the Gila Bend area until the Classic Period, after the Hohokam had migrated away from this region (McGuire and Schiffer 1982).

3.6 The Protohistoric Period

The Protohistoric period dates from approximately 1450/1500, the end of the Hohokam sequence, to the establishment of the Tubac presidio by the Spanish in 1753. The Protohistoric period saw reoccupation of several prehistoric sites by the Maricopa, Kohatk, or Pima, as well as the development of new settlements. In addition, ethnohistoric accounts (Harwell and Kelly 1983:72) place the Maricopa westernmost point of earlier territorial claims as the Mohawk Mountains.

The Jesuit missionary, Father Eusebio Francisco Kino was the first Spanish explorer to provide written accounts of the Gila River area. He was assigned to missionize in the Pimeria Alta (Land of Upper Pimas), a region that today includes northern Mexico and southern Arizona. During Kino's travels, he established many visitas and a few missions from the modern international border to the Gila River region. In addition, his

explorations served as an important first step toward an overland route between Sonora, the Pima villages of the Gila River, and settlements along the California coast. Kino visited villages along the Gila River at least six times between 1691 and 1702. During his journeys, Kino mapped and described Pima villages and his interactions with various groups. Kino does not describe irrigation agriculture, so it is suspected that local populations subsisted by floodwater agriculture, hunting, and gathering. By 1744 however, the Pima were growing wheat with irrigation agriculture, and by 1775 irrigated wheat was a major crop in most Pima villages. Throughout the 1700s, the Spanish continued to expand the mission system in southern Arizona and continued to introduce non-native crops, animals, trade goods, religion, and culture.

3.7 The Historic Period

The Historic period in Arizona dates roughly from 1753 to 1954. The 1753 date was chosen as it represents the founding of the first permanent Spanish settlement in Arizona. Dates of Protohistoric and Historic periods can differ across Arizona, usually based on dates of contact with Europeans and dates of permanent settlement by Europeans. For the purposes of this study, the aforementioned dates will be used.

According to the National Parks Service, the year 1775 marks the year Juan Bautista de Anza (Anza) successfully opened an overland route of emigration and supply from Sonora to the missions and settlements of Alta California. The 198 soldiers and families that Anza escorted brought with them on their 1,200 mile trek their language, traditions, and diverse New World Hispanic culture. The backgrounds of all soldiers and settlers were carefully recorded as español, mulato, or mestizo. Almost all the expedition members were born on this continent and had mixed European, African or Indian parentage. These influences changed the lives of the indigenous peoples and shaped the development of Arizona and California. The route Anza opened supplied the settlements of Alta California long enough for them to become established. In 1781, the Yumas revolted against Spanish rule and closed the route during the rest of the colonial period. In later years, Anza's trail served the military, settlers, cattlemen, forty-niners and other desert travelers.

The Mexican War of Independence did not have a direct affect on the area, as most of the battles took place far south of southern Arizona. However, the Spanish did have to withdraw their troops to central Mexico, which left a vacuum that the Apache exploited. During the 1820s, Apache raiders were estimated to have killed approximately 5,000 people in Sonora and southern Arizona. Mexico was victorious in the war, and declared independence in 1821. The new Mexican government abolished the mission system. In Arizona, settlements and occupation contracted to Tucson and Tubac. In response to increased Apache raiding, Piman settlement also contracted south and west. During the Mexican (1821 to 1853) and subsequent American occupations, Pima wheat production increased dramatically, as a result the Pima sold excess crop to settlers and travelers using the Gila Trail. Arizona north of the Gila River became part of the United States in 1848, although the American phase did not officially begin until 1853, when this area was sold to the United States by Mexico as part of the Gadsden Purchase. American fur trappers and traders began working the Gila River in 1825 (the American phase dates from 1853 to present). During the Mexican-American War, American military forces passed through southern Arizona on their way to California, commonly using routes centered on the Santa Cruz and Gila rivers. These routes were well blazed by the Army, and increased use occurred after the end of the war. One specific route, the Gila Trail, was by this time a widely used mail, freight, and emigrant route. At the close of the American Civil War, settlement in the Gila River valley increased dramatically. This was due in part to the American Army's attempts to pacify the Apache. Arizona was first

included as part of the Territory of New Mexico, and then the Territory of Arizona, and officially received American statehood in 1912.

Lundin (2010a) conducted extensive research on post-Civil War history in Arizona, specifically the Middle Gila River area. His historical data (Lundin 2010a) is presented here. Americans began to settle permanently along the Gila River because of the availability of good agricultural lands. Agricultural activities by American settlers along the Middle Gila and further upstream caused an insufficient supply of water for Pima farmers. Settlement by Euroamericans into the area was encouraged by the Homestead Act of 1862 and the Desert Land Act of 1877 (Dorigo 2007). The first settlers were drawn to the floodplains of the Gila River in the late 1800s where there was a reliable water supply, an abundance of irrigable land, and favorable topography to build irrigation canal systems. With the establishment of irrigation agriculture, small communities began to form such as Arlington, Hassayampa, and Palo Verde. The first settlers in the Arlington area arrived in 1876 (Dorigo 2007). By 1899, a post office was established (Barnes 1988). By 1905, the population numbered 100 (Dorigo 2007). Hassayampa, located 5 miles east of the project area, developed much like the riverside town of Arlington. The post office was opened in 1881, but settlement lagged until the 1920s. Located 8 miles east of the Project area, Palo Verde followed a similar pattern, with the earliest settlers arriving in the late 1800s, a post office being established in 1910, and, by 1920, the population reaching 500 (Dorigo 2007; Barnes 1988).

Beyond the favorable floodplains and terraces of the Gila River, homesteading in the open desert was much more problematic because of a lack of available water. Homesteading in desert areas tended to lag behind the establishment of the riverine communities until supplies and equipment were more readily accessible. In particular, the ability to drill wells for irrigation water was essential for agricultural development in the desert areas. Nevertheless, even early settlers made an imprint on the desert landscape as networks of dirt roads were established between communities and other parts of the state. As shown on the 1916 General Land Office (GLO) map for Township 1 South and Range 6 West, although no settlements were present, the area was traversed by a expansive network of interconnecting roads, including one unnamed road that passed through the Project area (Figure 9). The map also shows two windmills in the area, suggesting the presence of either incipient homesteads or livestock ranching, or both. The arrival of the railroad along the Gila River was key to the growth of the early agricultural communities in the area and to the establishment of homesteads and agriculture beyond the river corridor. In 1909, the Phoenix and Buckeye Railroad was incorporated with the idea of constructing a 39-mile-long line from Phoenix to the Hassayampa River to serve the agricultural communities west of Phoenix (Christian 1988; Myrick 1975). The railroad line from Phoenix ended at Hassayampa, approximately 6 miles east of the project area. The railroad became operational in 1910 and, as a result, the agricultural communities in the area experienced an influx of supplies and materials. This much more efficient method for transporting crops and goods into Phoenix provided an economic boost that, in turn, facilitated more growth and agricultural development (Christian 1988). In June 1924, the Southern Pacific Railroad announced that it would extend the line from Phoenix to Hassayampa to Wellton, west of Yuma, where it would connect with the main transcontinental Sunset Route.

The new line opened in 1926, further connecting the agricultural communities with the national economy. The railroad extension, known as the Wellton-Phoenix-Eloy line, was constructed through the area approximately 1 mile south of the Project area, along with an Arlington Railroad siding/station that provided local farms direct access to the line. Unfortunately, the success was short-lived, as the economic Depression of the 1930s took its toll on rural farmers and the agricultural communities at large. The economic downturn continued up to World War II, when a new demand for goods infused Arizona's economy, not just in agriculture, but in other new industries such as military bases and aerospace businesses.

Following the end of World War II, and with a booming American economy, homesteading in the desert—in areas away from the river lands—became much more feasible and affordable. Large tracts of land fed by irrigation well systems began to be developed into agricultural fields in quarter, half, and full Section parcels. The southern half of Section 14 was converted to fields, with a farm labor camp established along the northern boundary along the mid-Section line.

The southern half of Section 14 was surveyed for archaeological sites as part of the planning effort for the construction of the Redhawk Power Plant. The farmstead was recorded as site AZ T:9:55 (ASM). Rogge et al. (1999) provided the following historical summary, which highlights the pattern of rural agricultural development that occurred throughout the area in the mid-twentieth century:

Site AZ T:9:55 (ASM) is located within what was known as the McMurtry Ranch before the land was acquired for the proposed Redhawk Power Plant. Records at the Arizona Department of Water Resources indicate that six wells were dug on this property. Well 623227 within the labor camp was dug in 1948, and Well 232229 in what appears to be a similar labor camp south of the railroad tracks also was dug that year. Three other wells were dug in the 1950s, and two more recently in 1978 and 1982. These records are consistent with oral history information provided by local residents which indicate that the land was first developed for agriculture shortly after World War II, primarily in the 1950s (Warren Gable, vice-president Arlington Canal Company, personal communication November 11, 1999; T. Gladden, farmer and former owner, personal communication November 16, 1999;

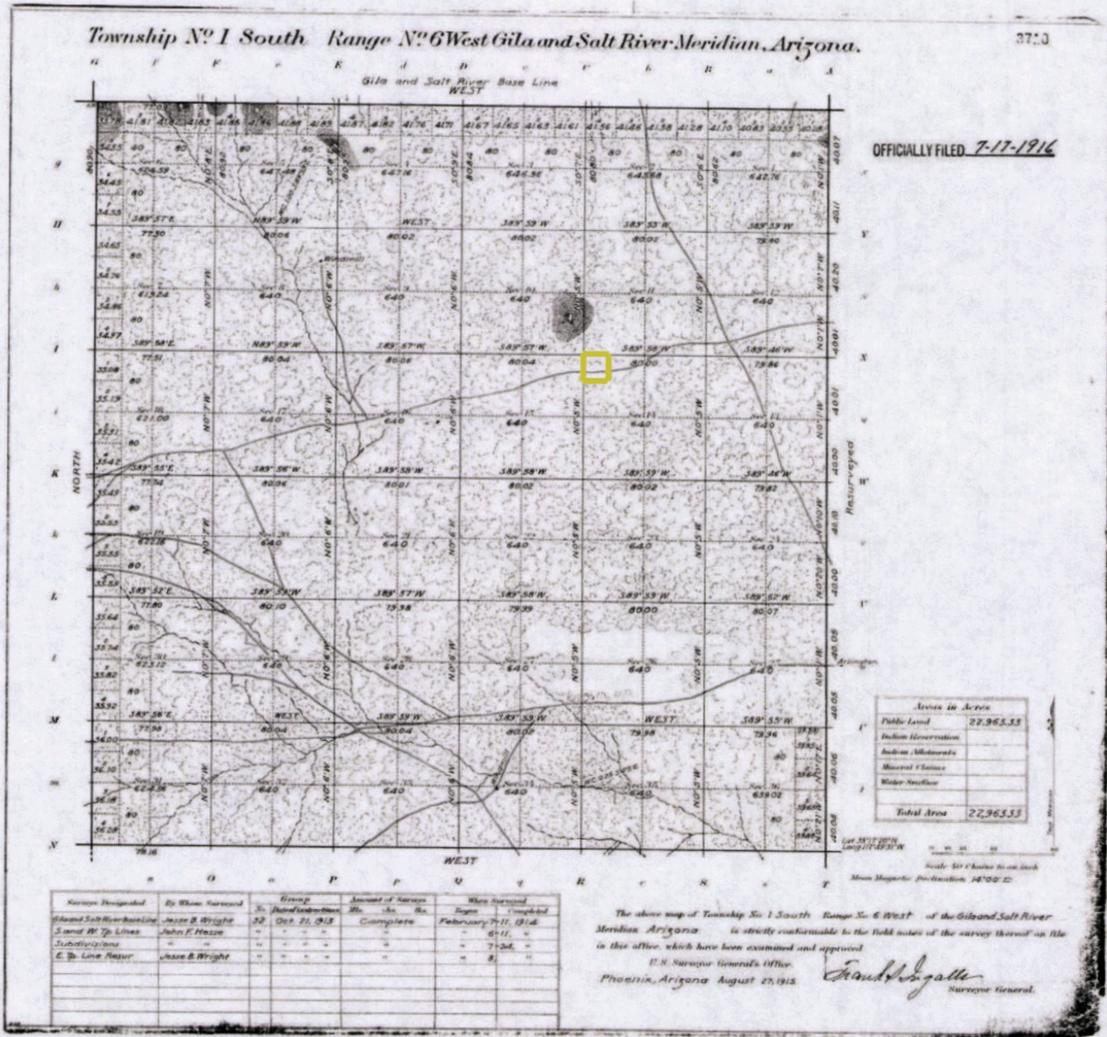


Figure 9. 1916 GLO map, T1 S/R6 W

Sue Mitchell, local vocational historian, personal communication November 10, 1999).

The farm was part of what was known locally as the Yonker's Place, which was worked by Bennie(?) Yonker and his two sons. Their place included part of the Palo Verde Nuclear Generation Station plant site as well. Charles Yonker, one of the sons, was most active in farming the land within the proposed Redhawk plant site. Jim and T. Gladden purchased the land within the plant site from the Yonkers, but T. Gladden soon left the partnership and Jim worked the land, living at the farm complex south of the railroad tracks for some time. Due to the poor economic of farming and illness, Jim Gladden quit farming and the land lay fallow for about 10 years.

William and Doris McMurtry acquired the land (perhaps after Gladden defaulted on a loan). William McMurtry apparently drilled a well on the land in 1982, but this may have been done only to meet a deadline for "grandfathering" new wells. Reportedly, the McMurtrys never lived on or farmed the land. Although grain and alfalfa were grown, cotton was a principle crop and seasonal laborers were needed to pick the cotton by hand. Mechanized cotton pickers apparently were not locally used until the late 1950s. The Yonkers reportedly hired primarily Hispanic laborers. Some farmers routinely hired members of the Tohono O'odham Nation (Papagos). We conclude that year-round laborers and their families probably occupied the three small houses at the labor camp, and migrant laborers lived in the multiple residential units primarily during the cotton picking season. These multiple units are austere, poorly built, and seemingly little more than sleeping rooms. There is no indication of cooking or dining facilities, nor is there any evidence of showers, restrooms, or even pit toilets.

The need for seasonal laborers undoubtedly declined as mechanical cotton picking machines became available, and the multiple unit buildings may have been used little after the 1960s. Much of the trash scattered around the site may be of more recent origin and may be associated with the families of farmhands who may have lived in the single-family units through most of the 1980s until the farming was abandoned.

The story of the farm labor camp south of the Project area is important to the current study for two reasons. First, it provides a useful context for understanding the history of typical agricultural development and abandonment in the area. Second, and more specifically, the labor camp appears to be the origin of several trash dumps recorded in the Project area during the current Class III survey.

The final chapter of development in the area, one that continues today, is the development of utility-scale power and energy facilities, highlighted by the Palo Verde Nuclear Generating Station. In 1976, a group of Arizona and California utility companies—Arizona Public Service, Salt River Project, El Paso Electric Company, Southern California Edison, PNM Resources, Southern California Public Power Authority, and the Los Angeles Department of Water and Power—purchased 4,000 acres of land about a mile northwest of the Project area and built the Palo Verde Nuclear Generating Station, the largest nuclear generating facility in the United States. The facility provides roughly 35 percent of the electricity generated in Arizona in a year. Since then, other power plants, substations, and a network of transmission lines have been erected across the landscape.

4.0 PREVIOUS RESEARCH

KPE's cultural staff reviewed existing records from the ASM database, and NRHP list, and examined historic aerial photographs and GLO maps. The purpose of the records check was to determine whether the project area had been previously surveyed and whether there were any known sites, and to identify the types and distribution of known cultural resources in the area that might be encountered during survey. The records check covered a 1-mile buffer area around the Project area. Lundin's 2010a Class III report, which includes a portion (substation parcel) of the Project area was also reviewed.

The research indicated that 16 surveys had been performed, and 15 sites had been documented in the vicinity (Tables 1 and 2). There was only one known site in the Project area, a historic road segment (AZ T:9:63). Three of the prior surveys covered portions of the Project area and only the one historic road segment had been had been recorded within the current Project area.

The one survey that covered a portion of the Project area was a linear survey on a north-to-south alignment. The survey is referenced in AZSITE as BLM-020-10-108. No information about the survey was available, and it does not appear that it resulted in any sites being documented within the Project area.

In 1999, Northland Research, Inc. (Northland), performed a Class III survey of 240 acres on the western end of the Project area prior to the construction of the Hassayampa substation (Hart 1999). Northland identified three sites in the area. AZ T:9:60 (ASM) is a single-episode trash dump dating to about 1949 (Hart 1999). Artifacts included mostly tin cans along with some fragments of broken bottle glass and ceramics dishes, faunal bone, and fragments of cement blocks. The site was determined not eligible for listing in the National Register with State Historic Preservation Office (SHPO) concurrence May 30, 2001. AZ T:9:61 (ASM) is a historic trash scatter and two concentrations of cobbles and rocks (Hart 1999). The trash dates to the late 1940s and early 1950 and includes mostly tin cans with a few fragments of broken glass bottles and ceramic dishes. The ages of the rock concentrations were unknown but they were potentially prehistoric in origin. The site was determined not eligible for listing in the National Register with SHPO concurrence May 30, 2001.

AZ T:9:63 (ASM) is an unnamed dirt road that appears on the 1916 GLO map for Township 1 South and Range 6 West. Northland recorded a segment of the old road west of the Project area (Hart 1999). Northland did not identify any artifacts or features in association with the road segment but noted that some of the isolates recorded during the survey may have been associated with the road. The unnamed road's primary function appears to have been providing local access through the area, and it was presumably associated with homesteading in the early 1900s. The site was determined not eligible for listing in the National Register with SHPO concurrence May 30, 2001 (Hart 1999). The recorded unnamed road segment continues eastward into Parcel C and was documented during Lundin's 2010a survey.

Lundin's 2010a survey for the Sun Stream Parcel C Project identified two historic sites, a road and a trash dumping area, and 17 IOs (objects). Only the segments of the unnamed historic road, AZ T:9:63 (ASM) is within the KPE Project area.

Agency Project Number	Project name	Reference(s)
1999-409	Palo Verde Switchyard Survey	Hart 2000
1999-435	Redhawk Power Plant	Rogge et al. 2000
2000-118	44 Acres Near Palo Verde Nuclear Generating Station	Walsh 2000
2000-631	Palo Verde Route, Cotton Center to Palo Verde	Garcia and Folb 2001
2001-306	APS / SRP Southwest Valley 500 kV Transmission Line Project	Hackbarth 2001
2001-724	Mesquite Pipeline Cultural Resources Survey	Wilcox and Adamson 2002
2003-1501	Palo Verde Sub-alternatives Survey, Devers to Palo Verde No. 2 Transmission Project, Maricopa Co.	Luhnow and Dickinson 2007
2008-176	Elliot Road Materials Pit	Christensen 2008
2008-351	Palo Verde Nuclear Generating Station's New Evaporation Pond	Berelov 2006
2012-251	Transwestern Natural Gas Service Lateral to Mesquite Power Generating Plant	Buckles and Prasciunas 2012
2012-559	Sun Streams South	Lundin 2010b
BLM-020-11-42	APS/SDG&E Interconnect Project	Wirth Associates, Inc. 1980
BLM-020-10-101	No information available	No information available
BLM-020-10-108	No information available	No information available
7.1012.SHPO	No information available	No information available
Not Assigned Yet	Sun Streams Parcel C	Lundin 2010a

Resource Number	Description	Eligibility Criterion	Reference(s)
AZ T:9:55 (ASM)	Historic farm labor camp	Not Eligible	Rogge et al. 1999
AZ T:9:58 (ASM)	Historic trash dump	Not Eligible	Walsh 2000
AZ T:9:59 (ASM)	Historic trash scatter	Not Eligible	Walsh 2000
AZ T:9:60 (ASM)	Historic trash dump	Not Eligible	Hart 2000
AZ T:9:61 (ASM)	Historic trash dump and small prehistoric rock scatter	Not Eligible	Hart 2000
AZ T:9:62 (ASM)	Historic trash dump	Not Eligible	Hart 2000
AZ T:9:63 (ASM)	Historic road segment	Not Eligible	Hart 2000
AZ T:9:73 (ASM)	Historic can dump	Not Eligible	Garcia and Folb 2001; Lundin 2010b
AZ T:9:107 (ASM)	Modern Railroad Spur	Not Eligible	Berelov 2006
AZ T:9:110 (ASM) /NA12496	Rock features	Eligible	Christensen 2008; Stein et al. 1977
AZ T:9:123 (ASM)	Trash dump	Not Eligible	Lundin 2010b
AZ T:9:124 (ASM)	Trash dump	Not Eligible	Lundin 2010b
AZ T:9:125 (ASM) /NA12498	Historic trail and rock enclosure	Not Eligible	Trott 1974; Lundin 2010b
AZ T:9:126 (ASM) /NA12508	Intaglio and stone enclosure	Eligible	Trott 1974; Lundin 2010b
AZ T:9:159 (ASM)	Historic Road	Not Eligible	Buckles and Prasciunas 2012

In addition to the three surveys that covered portions of the Project area, other surveys in the vicinity have identified a number of prehistoric and historic sites. These sites and their distribution across the landscape provide a general understanding of the broad pattern of human use and occupation in the area over time.

In 1973, the Museum of Northern Arizona (MNA) recorded several sites in the vicinity as part of the environmental investigations for the construction of the Palo Verde Nuclear Generating Station (Trott 1974). MNA recorded three sites on the buttes north of Elliot Road northwest of the Project area. The sites were designated NA12496, NA12498, and NA12508.

MNA described site NA12496 as a series of seven rock rings on the western side of the butte (MNA site card). According to Christensen (2008), MNA revisited the site in 1975 to perform some additional mapping and measuring of features; however, no information about this work was available.

MNA described site NA12498 as a historic basalt-lined trail leading to a rock enclosure (NA12498 site card). MNA believed the site was historic because of the caliche deposits on the basalt rocks used to create the enclosure and trail. HDR revisited the site in 2010 during the Class III survey for the Sun Streams project and assigned it Arizona State Museum (ASM) site number AZ T:9:125 (ASM) (Lundin 2010b). HDR found the site to be in good condition with no new disturbances since its original recording. HDR noted that the absence of artifacts made it difficult to place temporally, but noted that a lack of soil deposition along the base of the rock features suggested it was likely historic in age. HDR recommended the site as not eligible for National Register listing (Lundin 2010b).

MNA described site NA12508 as a stone enclosure and cleared area on top of a small hill (NA12508 site card). It was noted that the cleared area formed an indiscernible design. Trott (1974) reported that the rock enclosure was circular in shape and measured approximately 8 ft in diameter. The condition of the site was described as "eroded." There was no mention of artifacts or the site's National Register eligibility. HDR revisited the site in 2010 and assigned it ASM site number AZ T:9:126 (ASM) (Lundin 2010b). HDR recorded seven features: an intaglio, a rock alignment, a dry-laid masonry structure, a cleared trail, and three cleared areas. The site was in good condition and was recommended eligible for listing on the National Register under Criterion D for its potential to inform about prehistoric temporary habitation and limited activity in the region, Native American religious and ceremonial practices, and regional land use patterns (Lundin 2010b).

In 1980, Wirth Associates, Inc., conducted a Class III survey on the eastern side of the large butte in Section 10, extending north from Elliot Road. The survey was performed for the APS/SDG&E Interconnection Project under project number BLM-020-11-42 (Wirth Associates, Inc. 1980). The survey overlapped sites AZ T:9:125 (ASM) and AZ T:9:126 (ASM); however, little information about the survey was available in AZSITE, with no specific information about the sites.

In 1994, Dames & Moore, Inc., performed a linear Class III survey along an east-to-west alignment approximately 0.5 mi south of the project area (Rogge 1994). The survey was sponsored by El Paso Natural Gas Company's PacifiCorp Turbine Pipeline project. No sites were found in the vicinity of the current project.

In 1999, Dames & Moore, Inc., performed a Class III survey of a 1,103-acre parcel south of the project area for the Redhawk Power Plant (Rogge et al. 1999). The survey documented a farm labor camp immediately south of Parcel C. The site, designated AZ T:9:55 (ASM), consisted of the remains of seven buildings in varied states of repair: three single-family residences, two multifamily residences or dormitories for single laborers, and two buildings of unknown function. The buildings and associated artifacts post-dated World War II, mostly dating to the 1950s and 1960s. The site was determined not eligible for listing in the National Register with SHPO concurrence May 30, 2001. It was subsequently razed for construction of the Redhawk Power Plant.

In 2000, EcoPlan Associates, Inc. (EcoPlan), performed an east-to-west linear survey along Elliot Road for a utility project (Garcia and Folb 2001). During its survey, EcoPlan recorded site AZ T:9:73 (ASM), a small historic trash dump located on the eastern slope of a low volcanic hill. The site primarily consisted of metal cans but also included glass, ceramics, and other miscellaneous pieces of metal. Based on the artifact assemblage and archival research, EcoPlan assigned a date of ca. 1920s (Garcia and Folb 2001). The site was recommended not eligible for inclusion in the National Register. HDR revisited the site in 2010 during a prior Class III survey for the Sun Streams project and concurred with the EcoPlan's eligibility recommendation (Lundin 2010b).

In 2008, Biozone, Inc., performed a 32-acre survey on and around the large butte in Section 10 north of Elliot Road for a materials source project (Christensen 2008). Christensen revisited site AZ T:9:110 (ASM), which had been originally documented by MNA as NA12496. Biozone, Inc., rerecorded the site and expanded the site boundary.

In 2010, HDR performed a 1,059-acre Class III survey on the northern side of Elliot Road in Sections 11 and 12 for the Sun Streams project (Lundin 2010b). As previously mentioned, HDR documented three previously recorded sites: AZ T:9:73 (ASM), AZ T:9:125 (ASM), and AZ T:9:126 (ASM). HDR recorded their condition, mapped them, and evaluated them for National Register eligibility (Lundin 2010b). HDR recommended that sites AZ T:9:73 (ASM) and AZ T:9:125 (ASM) were not eligible for listing in the National Register because of a lack of historic significance and information potential, and that site AZ T:9:126 (ASM) was eligible under Criterion D for its potential to inform about prehistoric temporary habitation and limited activity in the region, Native American religious and ceremonial practices, and regional land use patterns (Lundin 2010b). In addition, HDR recorded one new site within 0.5 mi of Sun Streams Parcel C. AZ T:9:124 (ASM) was a discrete trash dump consisting mainly of metal can and bottle glass dating between 1915 and 1930. The site was recommended not eligible for listing in the National Register (Lundin 2010b).

Finally, the AZSITE online database indicated that two other surveys took place in the vicinity. The surveys are designated 7.1012.SHPO and BLM-020-10-101. No information was available for either project.

5.0 SURVEY EXPECTATIONS

Based on the results of prior surveys in the area, some general patterns of prehistoric and historic period use are evident. Given the lack of reliable water sources in the area, permanent habitation sites would not be expected, and to date none have been found. Prehistoric sites would be expected to take the forms of small temporary campsites, resource procurement areas, trails, and isolated artifacts.

According to Lundin (2010a), there appears to be a cluster of prehistoric sites around the buttes north of Elliot Road, which may have functioned more directly in regional networks of sites and travel routes that are well documented across southern Arizona (Darling 2006). The historic period is characterized mostly by homesteading activities and eventually agricultural development, possibly some ranching. Typical sites expected would include homesteads, trash dumps, wells, and agricultural infrastructure. Based on the review of previous research in the area, historic maps, and aerial photographs, it was known that one unnamed road from the early 1900s crossed through the Project area and that a ca. 1950s/1960s farm labor camp was immediately to the south.

6.0 SURVEY METHODS

To ensure these types of sites were detected, the Class III survey was performed with parallel, pedestrian transects spaced no more than 10 m (33 ft) apart. Surface visibility was excellent, which allowed for 100 percent or complete inspection of the ground surface within the Project area; no portions of the Project area were omitted because of surface obstruction.

Cultural resources were categorized as sites or isolates based on general criteria established by ASM in the Revised Site Definition Policy for archaeologists working on State lands within Arizona (ASM 1995). Archaeological sites are defined as spatially finite areas of past human activity of archaeological interest and generally consist of artifact assemblages, features, and/or structural remnants. Therefore, cultural resources defined as “sites” are interpretable in terms of human behavior. In contrast, isolated occurrences (IOs) are single artifacts or features—or relatively few artifacts—that lack contextual information and interpretable meaning. Using ASM guidelines, sites were to be defined as such if they contained the following:

- a concentration of 30 or more artifacts of a single class within a 15 m diameter area
- a concentration of 20 or more artifacts of at least two classes within a 15 m diameter area
- one or more archaeological features in association with any number of artifacts
- two or more temporally associated features

Cultural manifestations not meeting these criteria were recorded as IOs. Unnamed dirt roads were documented individually as part of the cultural landscape; named roads were assigned ASM site numbers or updated.

All cultural resources were recorded in the field through written notes, digital photographs, and sketch maps. The locations of sites and IOs were recorded with a Global Positioning System (GPS) unit and were plotted on aerial photographs and 7.5-minute USGS topographic quadrangle maps.

7.0 SURVEY FINDINGS AND ASSESSMENT OF EFFECT

The cultural resources survey was performed on March 14, 2014, by Patricia Mitchell, Project Archaeologist for the project. The survey identified two historic sites, a road and a trash dumping area, and 15 IOs. No buildings, structures, or districts were identified. Both sites represent extensions of previously documented sites located beyond the limits of the Project area (both the Gen-Tie and the substation): the unnamed historic road, AZ T:9:63 (ASM), and the farm labor camp, AZ T:9:55 (ASM) (Confidential Appendix - Figure 10 - pending).

The trash dump, Site SS-H-1, is approximately 5' in diameter and is located on the western side of the substation parcel. The site consists of an assortment of modern and historic bottles and cans from as old as the 1950s. They include aerosol cans, a band-aid tin, an oil filter, medicine bottles (likely veterinary), jars (some with metal screw on lids), and light bulbs. Much of the trash deposit has been burned, but not all so it is apparent that this is a dump site that has been repeatedly used over the years. The oldest surface historic artifacts did not appear to be older than the 1950s.

Site SS-H-1, appears to be associated with site AZ T:9:55 (ASM) and retains integrity of location for the most part, although there is some evidence that the site's integrity of materials has been compromised by the burning of the trash, which has destroyed much of the deposits and left fragmented pieces of limited informational value. Furthermore, and perhaps most importantly, the site's integrity of association is tenuous at best because there are no clear connections between the various families, groups, and individuals who occupied the camp over the years and the individual trash piles generated. Taken as a collective whole, the trash dump assemblage is of relatively recent age (1950s to the 1970s), in poor condition because of burning, and is made up of rather common items of limited scientific value (e.g., jars, cans, and medicine bottles). Further study of the trash is not likely to generate additional important information regarding local history beyond that already obtained through field recording; therefore, the site is recommended not eligible for listing to the NRHP.

Within the substation segment of the Project area, the site is approximately 200 ft-long segment of an unnamed dirt road that is shown on the 1916 GLO map for Township 1 South and Range 6 West. The site also exists along the Gen-Tie alignment in shown plotted on a USGS topographic map in Figure 11 (Confidential Appendix). The road is poorly defined on the ground but is clearly visible from an aerial view (Figure 12, Confidential Appendix). Since its abandonment, presumably some time before the 1940s, it has been filled in with sediments and encroaching vegetation. Today, it appears more like a small wash than a road. A possible secondary branch of the road is to the south, although it was difficult to determine in the field whether it represents another road or an erosional channel created by sheet flows captured and redirected by the original road cut. No artifacts or features were found in association with the road. A review of GLO maps for the adjacent Townships revealed the road had no particular destinations. To the east, it is not shown on the GLO map for Township 1 South and Range 5 West, so its destination is unknown. Presumably, it headed east toward the Hassayampa and Gila Rivers. The road continued to the west for approximately 10 miles to "Mullen Wells," which connected with roads heading to the northwest and southwest.

Lundin (2010a) recommended the unnamed dirt road not eligible for listing in the NRHP. He wrote that the resource "is in poor condition, having been filled in by sediment. As such, it is a poor example of its type. The

road is not associated with specific events (Criterion A) or people (Criterion B) important in history, nor does it exhibit any historically unique aspects of design or engineering (Criterion C). In addition, further study of the road would not likely yield any useful information on the history of the area (Criterion D). Therefore, it is recommended that AZ T:9:63 (ASM) is not eligible for listing in the National Register." It is my assessment also that the segment within the Project area is recommended not eligible for listing in the NRHP.

Although IOs do not qualify as sites, they are still evaluated for NRHP eligibility as objects. The survey identified 14 IOs. They are summarized in Table 3 (Figure 13). The IOs included a few prehistoric artifacts and historic trash. One of the IOs appear to be exceptionally noteworthy in terms of the NRHP criteria (A–D) and, therefore, may be recommended eligible for listing upon further inquiry. Isolate 14 is a large dark green slab of stone measuring approximately 30 cm in diameter and 6-8 cm thick. Flat on both sides but no evidence of use wear or working on the stone. Perhaps a trail marker. Basalt metate (IO 13) with pecking found nearby (Figure 14).

Table 3. Newly Recorded and Updated Resources

Resource Number	Description	Eligibility Criterion	Reference(s)
AZ T:9:63 (ASM)	Historic road segment	Not Eligible	Hart 1999; Lundin 2010a
SS-H-1/ AZ T:9:55 (ASM)	Trash dump	Not Eligible	Rogge et al. 1999; Lundin 2010a
IO No. 1	Two historic cans and bottles	Not Eligible	Mitchell 2014
IO No. 2	Bifacial Mano fragment	Not Eligible	Mitchell 2014
IO No. 3	Rusted metal can	Not Eligible	Mitchell 2014
IO No. 4	Grey volcanic core fragment	Not Eligible	Mitchell 2014
IO No. 5	Possible basalt metate fragment. Embedded.	Not Eligible	Mitchell 2014
IO No. 6	Rusted metal can	Not Eligible	Mitchell 2014
IO No. 7	Can lid	Not Eligible	Mitchell 2014
IO No. 8	Rusted metal can	Not Eligible	Mitchell 2014
IO No. 9	Cobble volcanic secondary flake (found in a wash)	Not Eligible	Mitchell 2014
IO No. 10	Rusted metal can	Not Eligible	Mitchell 2014
IO No. 11	Rusted 5 gallon oil can and lid	Not Eligible	Mitchell 2014
IO No. 12	Rusted "Spam" type can	Not Eligible	Mitchell 2014
IO No. 13	Basalt basin metate (with pecking)	Not Eligible	Mitchell 2014
IO No. 14	Possible Stone Trail Marker (30 cm dia.)	Undetermined	Mitchell 2014



Figure 13. Trail Marker (?) IO No. 14, Facing Down



Figure 14. Metate IO No. 13, Facing Down

8.0 MANAGEMENT SUMMARY AND RECOMMENDATIONS

At the request of Sun Streams, LCC, KPE conducted a Class III cultural resources survey of the Gen-Tie and substation parcels for the Sun Streams Gen-Tie Project. These parcels encompasses approximately 16 acres of privately owned land. The purpose of the survey was to identify prehistoric and historic cultural resources that could potentially be affected by the project. Two sites were identified, along with 14 IOs. Site SS-H-1 represents one of the trash dumping areas that is likely associated with adjacent site AZ T:9:55 (ASM), a farm labor camp. AZ T:9:63 (ASM) is an unnamed dirt road that dates to the early 1900s. Both sites are recommended as not eligible for NRHP listing because of a lack of information potential. No further work is recommended for these sites. Additionally, 13 of the 14 IOs recorded during the course of the survey are recommended as not eligible for NRHP listing because they are objects lacking historical significance. There is only one artifact of note that requires additional research at this time. Isolate (IO 14) 14, a large green stone - possibly a trail marker.

If previously unidentified cultural resources should be discovered during construction, the contractor must stop work immediately and take all reasonable steps to secure the preservation of those resources. The Arizona State Museum (ASM) should be notified to make arrangement for the appropriate assessment and treatment of those resources. If any human remains or funerary objects are unexpectedly discovered, they should be reported to the director of the ASM in accordance with A.R.S. § 41-865.

9.0 REFERENCES CITED

- Abbott, D. R.
2000 *Ceramics and Community Organization among the Hohokam*. University of Arizona Press, Tucson.
- 2003a The Politics of Decline in Canal System 2. In *Centuries of Decline during the Hohokam Classic Period at Pueblo Grande*, edited by D. R. Abbott, pp. 201–227. The University of Arizona Press, Tucson.
- 2003b The Politics of Decline in Canal System 2. In *Centuries of Decline During the Hohokam Classic Period at Pueblo Grande*, edited by D. R. Abbott, pp. 201–227. The University of Arizona Press, Tucson.
- 2006 Hohokam Ritual and Economic Transformation: Ceramic Evidence from the Phoenix Basin, Arizona. *North American Archaeologist* 27:285–310.
- 2009 Extensive and Long-Term Specialization: Hohokam Ceramic Production in the Phoenix Basin, Arizona. *American Antiquity* 74:531–557.
- 2010 The Rise and Demise of Marketplace Exchange among the Prehistoric Hohokam of Arizona. In *Archaeological Approaches to Markets in Ancient Societies*, edited by C. P. Garraty and B. L. Stark, pp. 63–86. University Press of Colorado, Boulder.
- Abbott, D. R., and M. S. Foster
2003 Site Structure, Chronology, and Population. In *Centuries of Decline during the Hohokam Classic Period*, edited by D. R. Abbott, pp. 24–47. University of Arizona Press, Tucson.
- Abbott, D. R., A. M. Smith, and E. Gallaga
2007 Ballcourts and Ceramics: The Case for Hohokam Marketplaces in the Arizona Desert. *American Antiquity* 72:461–484.
- Ayres, J. E.
1975 Archaeological Reconnaissance of the Gila River Indian Reservation, Final Report. Ms. on file, Arizona State Museum, University of Arizona, Tucson.
- Baldwin, L., G. E. Rice, M. K. Woodson, B. G. Randolph, and R. Rhoades
2005 *A Supplemental Cultural Resources Survey of the Pima-Maricopa Irrigation Project Main-Stem Canal Alignments, Maricopa and Pinal Counties, Arizona*. P-MIP Technical Report No. 2005-04. Cultural Resource Management Program, Gila River Indian Community, Sacaton, AZ.
- Barnes, Will C.
1988 *Arizona Place Names*. University of Arizona Press, Tucson.
- Barz, D. D.
1998 *A Cultural Resources Survey of Approximately 40 Miles of Interstate 10 Right-of-Way Between Picacho and Casa Blanca Road Interchange, Northwestern Pinal County, Arizona*. Archaeological Research Services, Inc. Report No. 98:09. Archaeological Research Services, Inc., Tempe.
- Bayman, J. M.
2001 The Hohokam of Southwest North America. *Journal of World Prehistory* 15:257–311.
- Berry, C. F., and W. S. Marmaduke
1982 *The Middle Gila Basin: An Archaeological and Historic Overview*. Northland Research, Phoenix.

Bilsbarrow, M. H.

- 2003 *SHPO Position on the Roles of Archaeological Testing*. SHPO Guidance Point No. 2, Arizona State Historic Preservation Office, Arizona State Parks. Phoenix.

Bronitsky, G., and J. D. Merritt

- 1986 *The Archaeology of Southeast Arizona: A Class I Cultural Resource Inventory*. Cultural Resource Series Monograph No. 2. Bureau of Land Management, Arizona State Office, Phoenix.

Bubemyre, T., M. Brodbeck, and R. B. Neily

- 1998 *A Cultural Resources Survey of the Borderlands Area, Gila River Indian Community, Maricopa County, Arizona*. CRMP Technical Report No. 97-23. Cultural Resource Management Program, Gila River Indian Community, Sacaton, Arizona.

Cable, J. S., and D. E. Doyel

- 1987 Pioneer Period Village Structure and Settlement Pattern in the Phoenix Basin. In *The Hohokam Village: Site Structure and Organization*, edited by D. E. Doyel, pp. 21–70. American Association for the Advancement of Science, Glenwood Springs, Colorado.

Christensen, A. L.

- 2008 A Cultural Resource Survey of a Proposed Materials Pit on Elliot Road between Wintersburg and Arlington, Maricopa County, Arizona. A. L. Christensen. Biozone, Prescott.

Christian, Edith Mae Sandell

- 1988 *Buckeye the First 100 Years 1888–1988*. Buckeye Valley Centennial Commission, Buckeye.

Ciolek-Torrello, R.

- 1995 The Houghton Road Site, the Agua Caliente Phase, and the Early Formative Period in the Tucson Basin. *Kiva* 60:531–574.

Cordell, Linda

- 1997 *Archaeology of the Southwest*. Academic Press, San Diego.

Crown, Patricia L.

- 1994 *Ceramics and Ideology: Salado Polychrome Pottery*. University of New Mexico Press, Albuquerque.

Crown, Patricia L., and W. J. Judge (editors)

- 1991 *Chaco and Hohokam: Prehistoric Regional Systems in the American Southwest*. School of American Research Press, Santa Fe.

Darling, J. A.

- 2006 *Getting There: Pima Song and the Archaeology of Space*. Presented at the 10th Biennial Southwest Symposium, Acts of History: Ritual, Landscape, and Historical Archaeology in the U.S. Southwest and Northwest Mexico. January 13–14, 2006, Las Cruces.

- 2011 *A Supplemental Cultural Resources Survey of Reach CB-III (Casa Blanca Canal) of the P-MIP Main-Stem Canal, Gila River Indian Community, Pinal County, Arizona* (letter to J. Czaplicki, May 27, 2011). P-MIP Technical Report 2011-08. Gila River Indian Community Cultural Resource Management Program, Sacaton, Arizona.

Dean, J. S. (editor)

- 2000 *Salado*. University of New Mexico Press, Albuquerque.

- DeJong, D. H.
2009 *Stealing the Gila: The Pima Agricultural Economy and Water Deprivation, 1848–1921*. The University of Arizona Press, Tucson.
- Diehl, M. W.
2003 *The Organization of Resource Use in a Desert Landscape: The Early Agricultural Period in Southern Arizona*. Anthropological Papers No. 34. Center for Desert Archaeology, Tucson.
- Doelle, W. H.
1981 The Gila Pima in the Late-Seventeenth Century. In *The Protobhistoric Period in the North American Southwest, A.D. 1450–1700*, edited by D. R. Wilcox and W. B. Masse, pp. 57–70. Anthropological Research Papers No. 24. Department of Anthropology, Arizona State University, Tempe.
- Dorigo, Gabriela
2007 *SR 801, SR 85 to SR 303L Study Area Architectural Overview*. Report No. 06-971. EcoPlan Associates, Inc., Mesa.
- Doyel, D. E.
1974 *Excavations in the Escalante Ruin Group, Southern Arizona*. Archaeological Series No. 37, Arizona State Museum, University of Arizona, Tucson.

1980 Hohokam Social Organization and the Sedentary to Classic Period Transition. In *Current Issues in Hohokam Prehistory: Proceedings of a Symposium*, edited by D. E. Doyel and F. Plog, pp. 23–40. Anthropological Research Papers No. 23. Arizona State University, Tempe.

1981 *Late Hohokam Prehistory in Southern Arizona*. Contributions to Archaeology No. 2, Gila Press, Scottsdale.

1991 Hohokam Cultural Evolution in the Phoenix Basin. In *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest*, edited by G. J. Gumerman, pp. 231–278. University of New Mexico Press, Albuquerque.
- Eiselt, B. S., M. K. Woodson, J. Touchin, and E. Davis
2002 *A Cultural Resources Assessment of the Casa Blanca Management Area, Pima-Maricopa Irrigation Project (P-MIP), Gila River Indian Community*. P-MIP Report No. 8. Cultural Resource Management Program, Gila River Indian Community, Sacaton, Arizona.
- Ezell, Paul H.
1983 A History of the Pima. In *Southwest*, edited by A. Ortiz, pp. 149–160. Handbook of North American Indians, vol. 10, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Fish, P. R.
1989 The Hohokam: 1,000 Years of Prehistoric in the Sonoran Desert. In *Dynamics of Southwest Prehistory*, edited by L. S. Cordell and G. J. Gumerman, pp. 19–63. Smithsonian Institution Press, Washington, DC.
- Fish, S. K., and P. R. Fish
2008 *The Hohokam Millennium*. School of American Research Press, Santa Fe.
- Foster, M. S., and J. C. Ravesloot

- 1999 *A Cultural Resource Evaluation of 41 Proposed Home Sites, Gila River Indian Community, Pinal and Maricopa Counties, Arizona*. GRIC CRMP Technical report No. 99-03. Cultural Resource Management, Dept. of Land and Water, Gila River Indian Community, Sacaton, Arizona.
- Foster, M. S., D. Morgan, and J. R. Rinker
 2000 *A Class III Cultural Resources Survey of Approximately 62 Miles of San Carlos Irrigation Project (SCIP) Electrical Transmission Line Right-of-Way, Gila River Service Area, Gila River Indian Community, Pinal County, Arizona*. CRMP Technical Report No. 2000-23. Cultural Resource Management Program, Gila River Indian Community, Sacaton.
- Garcia, Daniel, and Lisa Folb
 2001 *A Cultural Resource Survey of the Palo Verde Steam Transportation Route, from Cotton Center to Palo Verde, Maricopa County, Arizona*. Cultural Resource Report No. 00-380:6/7. EcoPlan Associates, Inc., Mesa.
- Garraty, C. P.
 2011 *The Origins of Pottery as a Practical Domestic Technology: Evidence from the Middle Queen Creek Area, Arizona*. *Journal of Anthropological Archaeology* 30:220–234.
- Garraty, C. P., M. K. Woodson, and D. Morgan
 2009 *Data-Recovery Investigations at Seven Sites in Blackwater Reaches BW-IB and BW-RS of the Pima-Maricopa Irrigation Project, Blackwater Management Area, Gila River Indian Community, Pinal County, Arizona*. P-MIP Technical Report No. 2007-01. Cultural Resource Management Program, Gila River Indian Community, Sacaton.
- Garraty, C. P. and M. K. Woodson
 2009 *Archaeological Testing along Reaches BW-IB, BW-RS, BW-ILA, ST-LA, and ST-ID of the Pima-Maricopa Irrigation Project Main-Stem Canal, Blackwater and Santan Management Areas, Gila River Indian Community, Pinal County, Arizona*. P-MIP Technical Report No. 2007-04. Cultural Resource Management Program, Gila River Indian Community, Sacaton.
- 2011a *Archaeological Testing along Reach CB-III (Casa Blanca Canal) of the Pima-Maricopa Irrigation Project Main-Stem Canal, Casa Blanca Management Area, Gila River Indian Community, Pinal County, Arizona*. P-MIP Technical Report No. 2011-10. Cultural Resource Management Program, Gila River Indian Community, Sacaton, in press.
- 2011b *A Treatment Plan for Cultural Resources Along Reach CB-III (Casa Blanca Canal) of the Pima-Maricopa Irrigation Project Main-Stem Canal, Pinal County, Arizona*. P-MIP Technical Report No. 2011-11. Cultural Resource Management Program, Gila River Indian Community, Sacaton, in preparation.
- Graybill, D. A., D. A. Gregory, G. S. Funkhouser, and F. Nials
 2006 *Long-Term Stramflow Reconstructions, River Channel Morphology, and Aboriginal Irrigation Systems Along the Salt and Gila Rivers*. In *Environmental Change and Human Adaptation in the Ancient American Southwest*, edited by D. E. Doyel and J. S. Dean, pp. 69–123. University of Utah Press, Salt Lake City.
- Grebinger, P.
 1976 *Salado: Perspectives from the Middle Santa Cruz Valley*. *Kiva* 42:39–46.
- Gumerman, G. J. (editor)

- 1991 *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest*. University of New Mexico Press, Albuquerque.
- Hackenberg, R. A.
1983 Pima and Papago Ecological Adaptations. In *Southwest*, edited by A. Ortiz, pp. 161–177. Handbook of North American Indians, Vol. 10, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Hart, David R.
1999 *Cultural Resources Survey of 240 Acres for the Palo Verde Switchyard, Maricopa County, Arizona*. Technical Report 00-01. Northland Research, Inc., Tempe.
- Haury, E. W.
1976 *The Hohokam: Desert Farmers and Craftsmen: Excavations at Snaketown, 1964–65*. University of Arizona Press, Tucson.
- Hegmon M., M. A. Peeples, A. P. Kinzig, S. Kulow, C. M. Meegan, and M. C. Nelson
2008 Social Transformation and Its Human Costs in the Prehispanic U.S. Southwest. In *American Anthropologist* 110:313–324.
- Howard, J. B.
2006 *Hohokam Irrigation Communities: A Study of Internal Structure, External Relationships and Sociopolitical Complexity*. Unpublished Ph.D Dissertation, School of Human Evolution and Social Change, Arizona State University, Tempe.
- Huckell, B. B.
1984a *The Archaic Occupation of the Rosemont Area, Northern Santa Rita Mountains, Southeastern Arizona*. Archaeological Series No. 147(1). Arizona State Museum, University of Arizona, Tucson.
1984b The Paleo-Indian and Archaic Occupation of the Tucson Basin: An Overview. *Kiva* 49:133–146.
- Loendorf, C. and G. E. Rice
2004 *Projectile Point Typology, Gila River Indian Community, Arizona*. Gila River Indian Community Anthropological Research Papers No. 2. Cultural Resource Management Program, Gila River Indian Community, Sacaton, Arizona.
- Lundin, Deil
2010a A Class III Cultural Resources Survey of Parcel C for the Sun Streams Solar Energy Project, near Arlington, Maricopa County, Arizona.
2010b A Class III Cultural Resources Survey of 1,059 Acres for the Sun Streams Solar Energy Project near Arlington, Maricopa County, Arizona. HDR Engineering, Inc., Phoenix.
- Mabry, J. B. (editor)
1998 *Paleoindian and Archaic Sites in Arizona*. Technical Report No. 97-7. Center for Desert Archaeology, Tucson.
- Masse, W. B.
1974 *The Archaeological Resources of the Gila River Farms*. Arizona Archaeological Center, National Park Service.
- Matson, R. G.

- 1991 *The Origins of Southwestern Agriculture*. University of Arizona Press, Tucson.
- McGuire, Randall H., and Michael B. Schiffer
 1982 *Hohokam and Patayan: Prehistory of Southwestern Arizona*. Academic Press, New York.
- Miles, W. D., M. K. Woodson, and F. Landreth
 2008 *Annual Report on Cultural Resources Tasks Conducted in Fiscal Year 2007 Under The Programmatic Agreement Regarding Approval of Essential Services Construction in Underground Utility Corridor on the Gila River Indian Community, Arizona*. CRMP Technical Report No. 2007-10. Cultural Resource Management Program, Gila River Indian Community, Sacaton.
- Mindeleff, C.
 1977 Casa Grande: Hohokam Indian Ruins Arizona. *New England Magazine*. Preservation Reprint #8296. Wordmax Books, Laurel, Maryland.
- Mitalsky, F. [F. Midvale]
 1935 A General Map of the Central Pima Country on the Gila. Map prepared for Arizona Geography Course. Ms. on file, Arizona Collection, Hayden Library, Arizona State University, Tempe.
- Myrick, David F.
 1975 *Railroads of Arizona. Volume I: The Southern Roads*. Howell-North Books, San Diego.
- Neily, R. B., C. Broyles, M. Brodbeck, S. R. James, and J. Touchin
 1999 *A Cultural Resource Survey of the Santan Extension (Memorial) Management Area, Pima-Maricopa Irrigation Project, Gila River Indian Community, Maricopa and Pinal Counties, Arizona*. P-MIP Report No. 5. Cultural Resource Management Program, Gila River Indian Community, Sacaton, Arizona.
- Pfaff, C.
 1994 *The San Carlos Irrigation Project: An Historic Overview and Evaluation of Significance, Pinal County, Arizona*. Bureau of Reclamation, Technical Services Center, Denver.
- 1996 *San Carlos Irrigation Project—Photographs: Written Historical and Descriptive Data*. Historic American Engineering Record No. AZ-50. National Park Service, Western Region, San Francisco.
- Ravesloot, J. C., J. A. Darling, and M. R. Waters
 2009 Hohokam and Pima-Maricopa Irrigation Agriculturalists: Maladaptive or Resilient Societies? In *The Archaeology of Environmental Change*. edited by C. T. Fisher, J. B. Hill, and G. M. Feinman, pp. 232-245. University of Arizona Press, Tucson.
- Redman, C. L.
 1999 *Human Impacts on Ancient Environments*. University of Arizona Press, Tucson.
- Reid, J., and S. Whittlesey
 1997 *The Archaeology of Ancient Arizona*. University of Arizona Press, Tucson.
- Rogge, A. E. "Gene"
 1994 PacifiCorp Turbine Pipeline Project – Wintersburg Alternatives: Class I Cultural Resource Survey. Dames & Moore, Inc., Phoenix.
- Rogge, A. E. "Gene," and Sharron K. Bauer
 2000 Cultural Resource Survey for the Redhawk to Hassayampa Power Line Intertie Project. URS Dames & Moore, Inc., Phoenix.

- Rogge, A. E. "Gene," Douglas Avann, Cara Lonardo, Mathew E. Hill, Jr.
1999 Cultural Resources Survey for the Proposed Redhawk Power Plant. Dames & Moore, Inc., Phoenix.
- Russell, F.
1908 The Pima Indians. In *Twenty-Sixth Annual Report of the Bureau of American Ethnology, 1904-1905*, pp. 3-389. Smithsonian Institution, Washington, D. C. Reprinted in 1975 by University of Arizona Press, Tucson.
- Shaw, A. M.
1994 *A Pima Past*. The University of Arizona Press. Tucson, Arizona.
1995 *Pima Indian Legends*. The University of Arizona Press. Tucson, Arizona.
- Sliva, R. J.
2003 *The Early Agricultural Period in Southern Arizona: Material Culture*. Anthropological Papers No. 35, Center for Desert Archaeology, Tucson, Arizona.
- Southworth, C. H.
1914 Gila River Survey, Pinal County, Arizona. U.S. Department of the Interior, U.S. Indian Service Irrigation, Washington, D.C. Map copies on file, Cultural Resources Management Program, Gila River Indian Community, Sacaton.
1919 The History of Irrigation along the Gila River. In *Hearings before the Committee on Indian Affairs, House of Representatives, Sixty-Sixth Congress, First Session, on the Condition of the Various Tribes of Indians*, Vol. Vol.2 Appendix A, pp. 105-225. Government Printing Office, Washington, D.C.
- Stein, Pat H., Stanley Granger, and Cynthia L. Freeman
1977 A-76-79/A-77-38.MNA Archaeological Investigations, Arizona Nuclear Power Project, Salt River Project, Bureau of Land Management and Private Land, Maricopa County, Arizona, Final Report for Palo Verde to Westwing Transmission System: An Intensive Survey of the Transmission Line and Access Roads. Museum of Northern Arizona, Flagstaff.
- Trott, Joseph J.
1974 MNA Archaeological Clearance Investigations, Palo Verde Nuclear Generating Station Plant Site, NUS Corporation for Arizona Public Service Company, Tucson Gas and Electric Company, Salt River Project, and Bureau of Land Management. MNA Project No. A75-141B.MNA. Museum of Northern Arizona, Flagstaff.
- Vivian, G. R., and P. Spaulding
1974 *Test Excavations at Arizona U:13:27 (The Sacaton Turnkey Project)*. Arizona State Museum, University of Arizona, Tucson.
- Wallace, H. D.
1997 Presence or Parlance? The Meaning of "Hohokam" and Concepts of Culture, A.D. 800 to 1050, in Southeastern Arizona. In *The Archaeology of a Land Between: Regional Dynamics in the Prehistory and History of Southeastern Arizona*, edited by H. Wallace. Amerind Foundation, in preparation.
- Wallace, H. D., J. D. Heidke, and W. H. Doelle
1995 Hohokam Origins. *Kiva* 60:575-618
- Wasley, W. W., and D. Scovill

- 1969 Site Card for AZ U:13:27 (ASM). On file, Arizona State Museum, University of Arizona, Tucson.
- Webb, G.
1959 *A Pima Remembers*. University of Arizona Press, Tucson.
- Wells, E. C.
2006 *From Hobokam to O'odham: The Protobistoric Occupation of the Middle Gila River Valley, Central Arizona*. Gila River Indian Community, Anthropological Research Papers, Number 3, Gila River Indian Community, Cultural Resources Program, Sacaton, Arizona.
- Whittlesey, S. M.
1995 Mogollon, Hohokam, and O'otam: Rethinking the Early Formative Period in Southern Arizona. *Kiva* 60:465–480.
- Whittlesey, S. M., and R. Ciolek-Torrello
1996 The Archaic-Formative Transition in the Tucson Basin. In *Early Formative Adaptations in the Southern Southwest*, edited by B. J. Roth, pp. 49–64. Monographs in World Archaeology No. 25. Prehistory Press, Madison, Wisconsin.
- Whittlesey, S. M., W. L. Deaver, and J. J. Reid
1998 Yavapai and Western Apache Archaeology of Central Arizona. In *Overview, Synthesis, and Conclusions*, edited by S. M. Whittlesey, R. Ciolek-Torrello, and J. H. Altschul, pp. 185–214. *Vanishing River: Landscapes and Lives of the Lower Verde Valley: The Lower Verde Archaeological Project*. SRI Press, Tucson.
- Wilcox, D. R.
1979 The Hohokam Regional System. In *An Archaeological Test of the Sites in the Gila Butte-Santan Region, South-Central Arizona*, edited by G. Rice, D. Wilcox, K. Rafferty, and J. Schoenwetter, pp. 77–116. Anthropological Research Papers No.18. Arizona State University, Tempe.
- Wilcox, D. R., and T. P. McGuire, and C. Sternberg
1981 *Snaketown Revisited: A Partial Cultural Resource Survey, Analysis of Site Structure and an Ethnohistoric Study of the Proposed Hobokam-Pima National Monument*. Archaeological Series No. 155, Cultural Resource Management Division, Arizona State Museum, University of Arizona, Tucson.
- Wilcox, D. R., and C. Sternberg
1983 *Hobokam Ballcourts and Their Interpretation*. Archaeological Series No. 160, Arizona State Museum, University of Arizona, Tucson.
- Wilson, J. P.
1999 *Peoples of the Middle Gila: A Documentary History of the Pimas and Maricopas, 1500s–1945*. Ms. on file, Cultural Resource Management Program, Gila River Indian Community, Sacaton.
- Wood, D. G.
1972 *Archaeological Reconnaissance of the Gila River Indian Reservation: Phase III*. Archaeological Series No. 16. Tucson: Arizona State Museum, University of Arizona. Gila River Indian Community, Sacaton, Arizona.
- Woodson, M. K.

2009 Map of Prehistoric Hohokam Canal Systems in the Middle Gila Valley. 3rd edition. Cultural Resource Management Program, Gila River Indian Community, Sacaton.

2010 Re-Drawing the Map of the Hohokam Canals in the Middle Gila River Valley. *Journal of Arizona Archaeology* 1:5-20.

Woodson, M. K., and E. Davis

2001 *A Cultural Resources Assessment of the Western Half of the Blackwater Management Area, Pima-Maricopa Irrigation Project (P-MIP), Gila River Indian Community, Arizona.* P-MIP Report No. 14, Cultural Resource Management Program, Gila River Indian Community, Sacaton, Arizona.

Woodson, M. K., and M. Penta

2002 *Results of Monitoring of Emergency Installation Activities by the San Carlos Irrigation Project (SCIP) at a Pima Agency Building in Sacaton, Arizona.* CRMP Technical Report No. 2002-40, Cultural Resource Management Program, Gila River Indian Community, Sacaton.

Woodson, M. K., and B. G. Randolph

1997 *A Phase I Data Recovery Plan for the Proposed Public Health Nurse Complex, District 3, Gila River Indian Community, Pinal County, Arizona.* CRMP Technical Report No. 97-27. Cultural Resource Management Program, Gila River Indian Community, Sacaton.

2000 *National Register of Historic Places Eligibility Assessment of 67 Sites in and Adjacent to the Blackwater Management Area, Pima-Maricopa Irrigation Project, Gila River Indian Community.* P-MIP Technical Report No. 00-03. Cultural Resource Management Program, Gila River Indian Community, Sacaton.

10.0 CONFIDENTIAL APPENDICES - TABULAR DATA

Bound Separately - Not for Public Review

11.0 CONFIDENTIAL APPENDICES - MAPS

Bound Separately - Not for Public Review

Appendix E-2 – Consultation Letters



April 3, 2014

Caroline Antone
Cultural Resource Manager
Ak-Chin Him Dak Eco Museum Road
Ak-Chin Indian Community
47685 North Eco Museum Road
Maricopa, AZ 85239

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Ms. Antone:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the Arizona State Historic Preservation Office and the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

**3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us**

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file



April 3, 2014

Ms. Karen Ray
Coordinator Cultural Resources
Fort McDowell Yavapai Nation
P.O. Box 17779
Fountain Hills, AZ 85269

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Ms. Ray:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the Arizona State Historic Preservation Office and the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file



April 3, 2014

Mr. Barnaby Lewis
Tribal Historic Preservation Officer
Gila River Indian Community
P.O. Box 2140
Sacaton, AZ 85247

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Mr. Lewis:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the Arizona State Historic Preservation Office and the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

**3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us**

Mr. Barnaby Lewis
4/3/14

2

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file



April 3, 2014

Mr. Leigh Kuwanwisiwma
Director Cultural Preservation Office
The Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Mr. Kuwanwisiwma:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the Arizona State Historic Preservation Office and the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file



April 3, 2014

Ms. Diane Enos
President
Salt River Pima-Maricopa Indian Community
10005 East Osborn Road
Scottsdale, AZ 85256

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Ms. Enos:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the Arizona State Historic Preservation Office and the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

**3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us**

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file



April 3, 2014

Mr. James Garrison
State Historic Preservation Officer
Arizona State Historic Preservation Office
1300 West Washington Street
Phoenix, AZ 85007

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Mr. Garrison:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

**3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us**

Mr. James Garrison
4/3/14

2

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file



April 3, 2014

Mr. Peter Steere
Tribal Historic Preservation Officer
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

RE: Class III Cultural Resources Report for the Proposed Sun Streams Gen-Tie Project.

Dear Mr. Steere:

Sun Streams, LLC is proposing construction of the Sun Streams Gen-tie Project, a short 500 kV gen-tie line interconnecting the Sun Streams PV Solar Project Substation to the adjacent Hassayampa Switchyard near Arlington, Arizona. This Gen-tie Project would be approximately 0.3 miles long. A Class III cultural resources survey of 16 acres of private land prior to development of the gen-tie and substation facility was conducted and enclosed is a copy of the Class III Cultural Resources Report document for your review and comment.

The Project is applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC) prior to any ground disturbing construction activities. The Class III document provides the locations and descriptions of cultural resources within the proposed Project footprint.

The proposed Gen-tie is located on private land and does not cross any tribal lands; therefore, no information is included regarding any cultural resources on tribal lands. Furthermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information, including maps, will be deleted from any copies of the document available to the general public. This document has also been sent to the Arizona State Historic Preservation Office and the following Native America tribes and communities for review at this time: the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us

We would greatly appreciate your review and comments. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following at this mailing address:

Patricia T. Mitchell
1614 E. Weathervane Lane
Tempe, Arizona 85283

If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, ENValue
file

Exhibit F

EXHIBIT F

RECREATIONAL PURPOSES AND ASPECTS

As stated in Arizona Corporation Commission Rules of Practice and R14-3-219:

State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations and attach any plans the applicant may have concerning the development of the recreational aspects of the proposed site or route.

INTRODUCTION

The Sun Streams Gen-tie Project is located in an unincorporated area of western Maricopa County where there is significant existing electrical infrastructure including power plants, substations and transmission lines. The Applicant does not plan to make the lands covered by the Project available for recreational uses and nearby lands are likewise not available for recreation.

EXISTING CONDITIONS

Regional recreation information for the surrounding areas was gathered from Maricopa County, Arizona State Lands and BLM. Currently, there are no existing or planned designated recreational facilities or areas in the immediate vicinity of the Project.

The closest existing recreational area is a Maricopa County Park, Buckeye Hills Regional Park. This park is over 7 miles from the Project and the Project would not be visible from the park.

The Maricopa County Regional Trail is a trail that links into the Buckeye Regional Park. This trail is also over 7 miles from the Project.

There are no recreational plans on the State lands or BLM lands within 2 miles of the Project.

POTENTIAL EFFECTS

There are no existing or planned recreational facilities within the nearby area. The closest existing or proposed recreational use is over 7 miles away from the Project. Therefore, no recreational impacts are anticipated to result from the Sun Streams Gen-tie Project.

REFERENCES

Bureau of Land Management (BLM). Resource Management Plan (RMP) for the Lower Sonoran Field Office. 2012. March 2014 [Online] Located at: <https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=21456>.

County of Maricopa. Parks and Recreation [Online] Located at: <http://www.maricopa.gov/parks>

Exhibit G

EXHIBIT G

CONCEPTS OF TYPICAL FACILITIES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“Attach any artist's or architect's conception of the proposed plant or transmission line structures and switchyards, which applicant believes may be informative to the Committee.”

Four drawings are included:

Figure G-1a and Figure G-1b, Transmission Line Structure Types
Figure G-2, A-Frame Structure within the Project Substation
Figure G-3, Project Substation General Arrangement

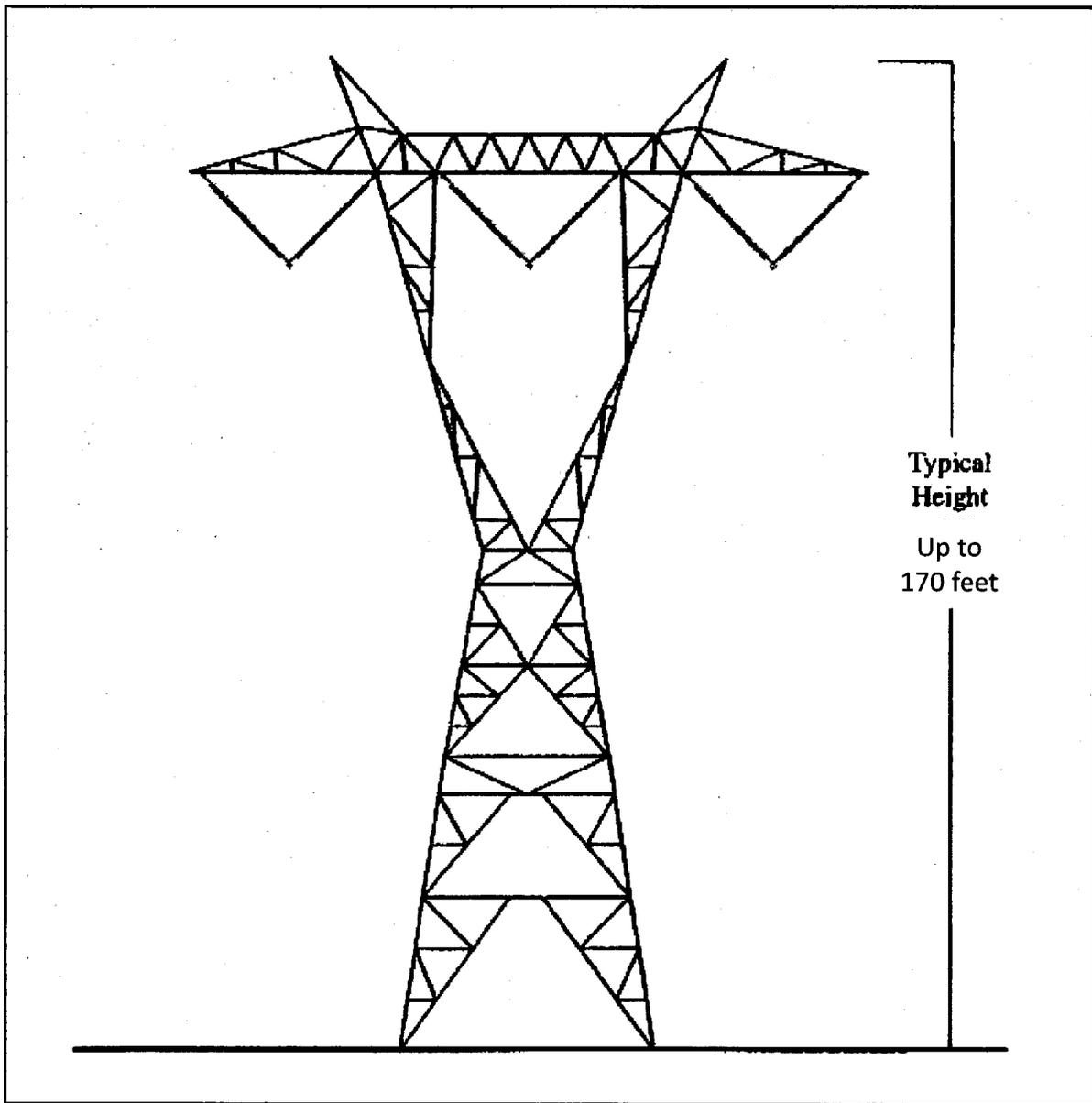


Figure G-1a
Typical 500kV Single-Circuit Steel Lattice Structure

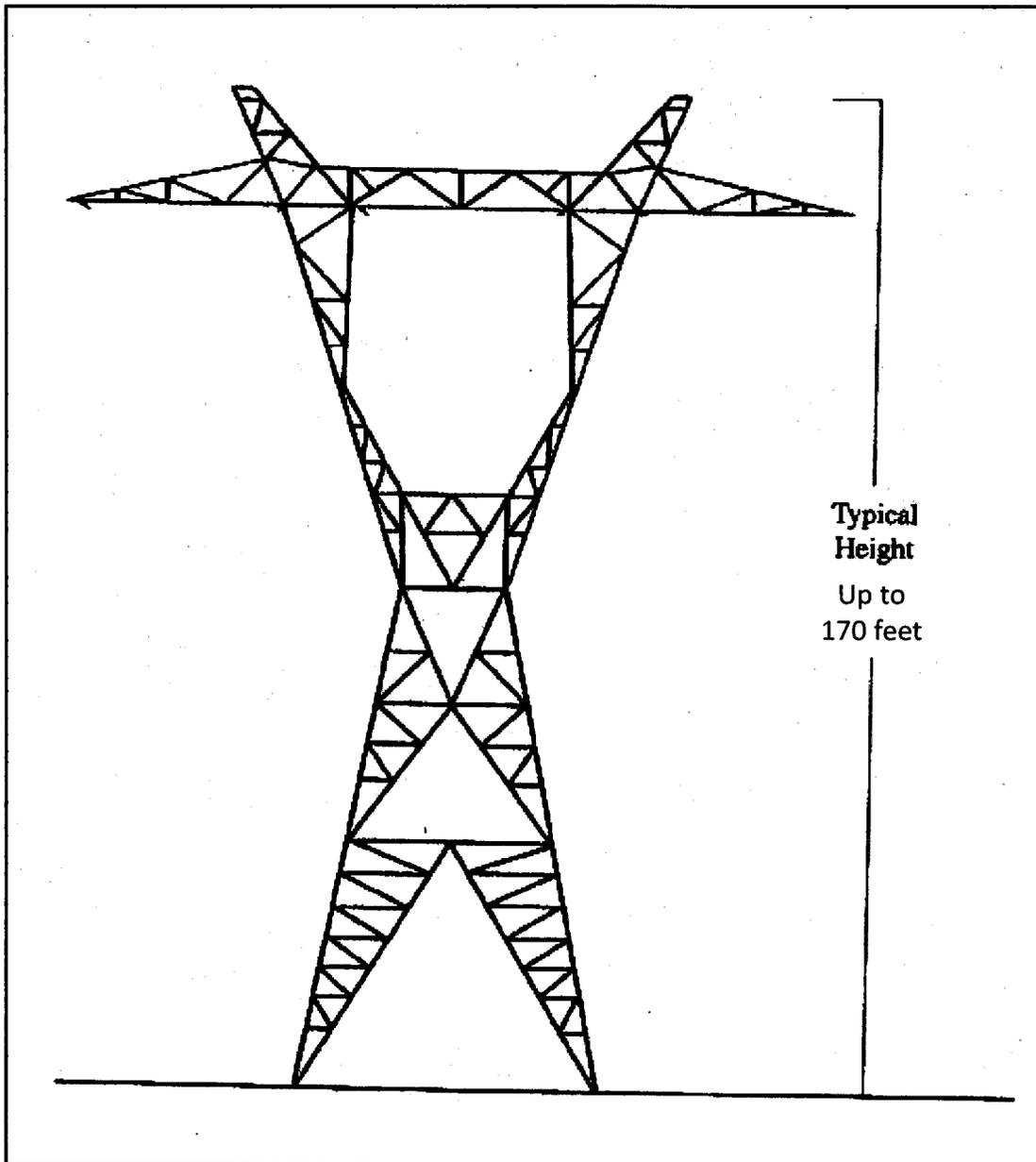


Figure G-1b
Typical 500kV Single-Circuit
Dead-End Steel Lattice Structure

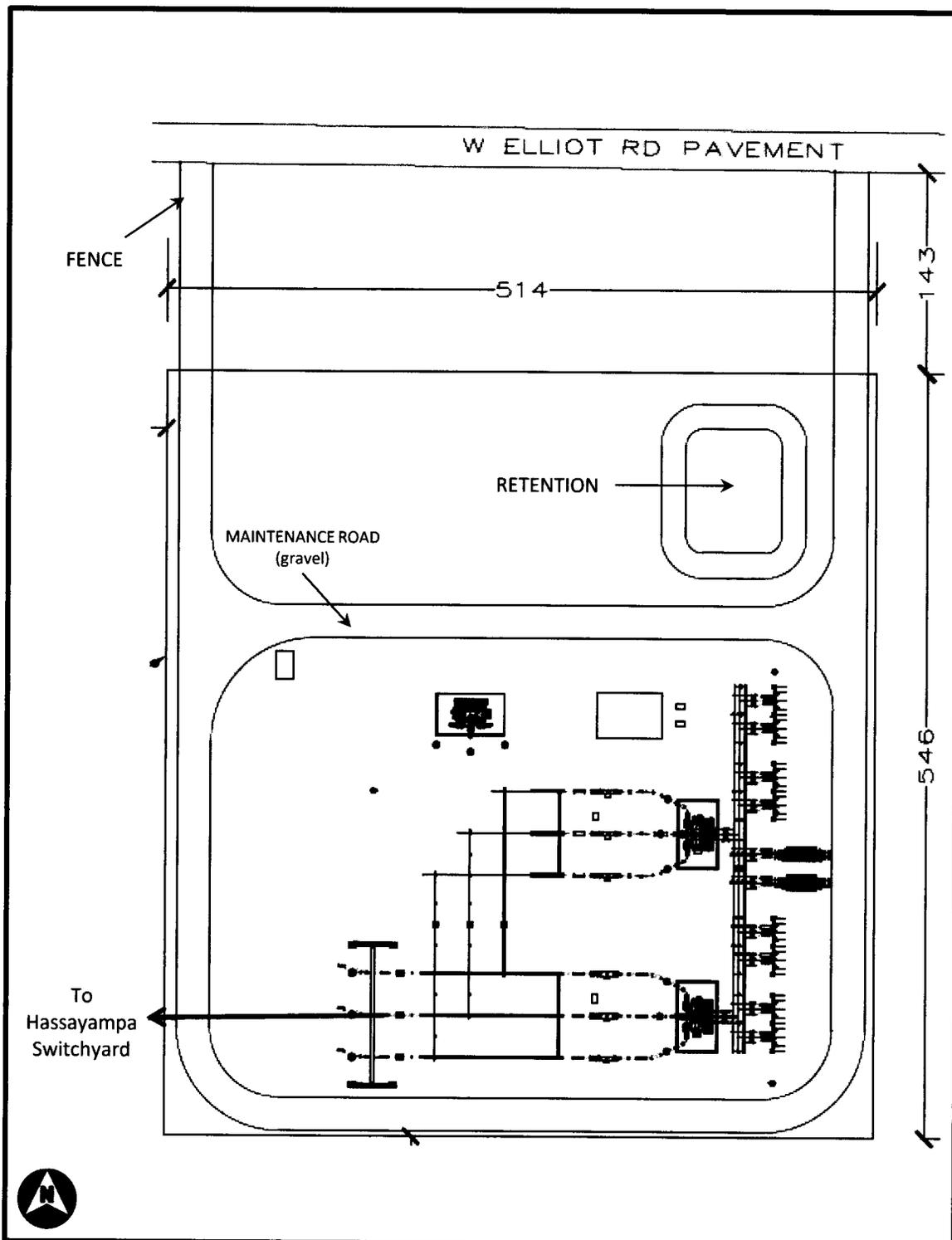


Figure G-3
 Project Substation General Arrangement
 Sun Streams Gen-tie Project

Exhibit H

EXHIBIT H

EXISTING PLANS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“To the extent Applicant is able to determine, state the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site or route.”

LOCAL AND STATE GOVERNMENT PLANS

The Sun Streams Gen-tie Project is located on private lands under the jurisdiction of Maricopa County. The relevant plans of Maricopa County for the lands in the vicinity of the Project are described in **Exhibit A**. The proposed Project is consistent with the Maricopa County Plans. The Sun Streams Gen-tie Project does not cross Arizona State Lands, though some do occur in the general area including a portion of the associated Sun Streams Solar Facility site.

FEDERAL GOVERNMENT PLANS

The Project does not cross Bureau of Land Management (BLM) lands or other federal lands but some do occur in the general area. There are no plans for development of the local BLM lands and they are currently being managed for limited dispersed uses.

PRIVATE ENTITY PLANS

Residential Development

There are no existing Planned Area Developments (PADs) for residential development within the vicinity of the Project.

Utilities

There are several power generation facilities in the immediate area of the Project including the Palo Verde Nuclear Generating Station and three large gas-fired projects. There are also a number other solar generation projects that have been approved and/or developed in the area. The existing Mesquite Solar Project and Arlington Valley Solar Energy II are located east and south of the proposed Gen-tie Project respectively. The Mesquite Solar West Project and the Arlington Valley Solar Energy Facility are solar projects that have been approved in the immediate area but not yet developed.

POTENTIAL EFFECTS

There are no planned local, state, or federal developments in the vicinity of the Project Site. The planned solar projects in the area would be consistent with the proposed Gen-tie Project.

REFERENCES

Bureau of Land Management (BLM). Resource Management Plan (RMP) for the Lower Sonoran Field Office. 2012. March 2014 [Online] Located at:
<https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=21456>.

County of Maricopa. Comprehensive Plan, Eye on Future 2020. Revised August 2008 [Online] Located at: <http://www.maricopa.gov/planning>.

County of Maricopa. US Old Highway 80 Area Plan, 2007. [Online] Located at:
<http://www.maricopa.gov/planning>.

County of, Maricopa. Maricopa County Zoning. January 2014 [Online] Located at:
<http://www.maricopa.gov/planning>.

Exhibit I

EXHIBIT I

ANTICIPATED NOISE / INTERFERENCE WITH COMMUNICATION SIGNALS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities.”

INTRODUCTION

The Sun Streams Gen-tie Project is located in an unincorporated area of western Maricopa County where there is significant existing electrical infrastructure – power plants, substations and transmission lines. Maricopa County does not have an applicable noise ordinance for this area.

A noise evaluation was conducted to determine the potential noise impacts that would be generated from the operation of the proposed Gen-tie Project. The noise that would be generated by the Project was calculated to determine what sound would be evident at the Project boundary and at the nearest sensitive receptors within the vicinity of the Project.

For measuring sound levels in ordinary environments, A-weighted (dBA) correction factors are employed. The A-weighted scale is used in most common sound level (noise) ordinances and standards. Environmental sound levels are generally described and evaluated in the following ways:

- The equivalent sound pressure level (Leq) is defined as the average sound level, on an energy basis, for a stated period of time (e.g., hourly) at a given location.
- The Ldn is the day/night sound level that was adopted by the Environmental Protection Agency (EPA) as a measure of community sound level. EPA defines Ldn as the average A-weighted sound level for a 24-hour period. Nighttime sound levels (10:00 PM. to 7:00 AM.) are increased by a 10 dB weighting factor, to account for the public’s sensitivity to nighttime sound levels when most people are sleeping. The daytime (7:00 AM to 10:00 PM) energy average sound level is added to a weighted (+10 dB) mean nighttime level. The Ldn meets the EPA requirements for a description of cumulative sound level exposure, in particular the requirement that it be easily measured with simple, relatively inexpensive equipment.
- The EPA has established sound levels that are identified as protective of public health and welfare. EPA identified Ldn of 55 dB for residential areas as an outdoor sound level above which the public health and welfare will be affected (EPA 1974).
- Typical day-night sound levels in urban areas range from 68 to 90 dB; suburban areas average 50 dB; and rural range from 40 dB to 50 dB depending on the type of rural area.

For purposes of general comparison, **Table I-1** lists the average sound level of various sources as defined by EPA.

Location	Sound Level (dB)
Inside an Average Residence	45
Light Traffic at 100 feet	50
Inside a Private Business	52
Inside a Large Store	60
Traffic near a Freeway	65
Normal Conversation (@ 3 feet)	65
Freight Train at 100 feet	75

Source: EPA

EXISTING SOUND LEVELS

The existing ambient noise in the vicinity of the Gen-tie Project site varies depending on distance from some of the existing noise sources in the area. Generally, noise levels would be typical for industrial areas because of the presence of multiple power generation facilities nearby. Noise levels in these areas can range from 55 to 75 dB depending the distance from the facility(s).

NOISE IMPACTS FROM PROPOSED PROJECT

The noise impacts generated from the Sun Streams Gen-tie Project would occur primarily during construction. Construction noise would be generated during site preparation and construction of the Project Substation and erection of the three Gen-tie Line support structures. Noise impacts during operations would be limited.

Construction

Noise generated during the construction phase would result from the operation of construction equipment and vehicles. **Table I-2** presents typical noise levels for construction equipment at a distance of 15 meters (45 feet). These values assume the equipment is operating at full power.

The typical noise 45 feet from a construction site would be 85 dBA because the construction equipment can be spread throughout a construction site and may not be operating concurrently. This value and the data presented above indicate that there will be a temporary increase in ambient noise that will be limited to the construction phase of the Project. The propagation of noise depends on many factors including atmospheric conditions, ground cover, and the presence of any natural or man-made barriers. As a general rule, noise decreases by approximately 6 dBA with every doubling of the distance from the source. Therefore, noise levels at various distances from the construction site can be predicted and are shown in **Table I-3**.

Equipment Category	Noise Level at 45 ft (dBA)
Dump Truck	88
Portable Rock Drill	88
Concrete Mixer Truck	85
Pneumatic tool	85
Grader	85
Front-End Loader	84
Mobile Crane	83
Excavator	82
Backhoe	81
Dozer	78
Generator	78

Distance from construction site (feet)	Predicted Noise Level (dBA)
45	85
90	79
180	73
360	67
720	61
1440	55

Construction noise generated by the Project would be intermittent in nature and would be temporary – only during the construction period. Construction of the Gen-tie Line and Project Substation is expected to take 6 to 8 months.

The nearest noise receptors (residences) are approximately 1.75 miles from the Project location. At this distance, the construction noise from the Project will be imperceptible and at or near the background levels in the area. The actual noise level at any given time will vary with distance and wind direction and velocity.

Nearly all construction of the Project would occur during daylight hours. Some deliveries and continuous construction activities such as foundation pours could possibly occur during non-daylight hours. Noise impacts from construction are expected to be minor and short in duration.

Operations

The operational noise profile of the Project would be limited. Providing the interconnection for a PV solar energy project, the Gen-tie Line and Project Substation would operate during daytime

hours when the sun is available to make power. Therefore, except for minimal noise that could be generated by nightly maintenance, they would not affect night time sound levels.

The nearest noise receptors (residences) are over 1.75 miles from the Project Substation. At this distance, any operational noise generated will be imperceptible and at or near the background levels in the area.

CONCLUSIONS

The impact from the Sun Streams Gen-tie Project on the sound levels in the area would be minimal. In addition, the nearest noise receptor (residence) is approximately 1.75 miles away.

The noise impact to people on Elliot Road (the adjacent public road) would be imperceptible since people on the road would be in their vehicles and because of the other existing industrial facilities in the vicinity. Therefore, noise levels produced by the Project would be similar to background noise levels for this area.

The noise generated by the operational phase of the Project would be less than background noise levels at the nearest receptors.

Therefore, construction and operation of the proposed Sun Streams Gen-tie Project will not have a perceptible noise impact to residences or other potential receptors in the vicinity.

This Project is also not expected to generate interference with communication signals because of its remote location, because of the shortness of the Gen-tie Line, because of the presence of multiple existing high-voltage transmission lines surrounding this short line, and because it would not be near any residences.

REFERENCES

Environmental Protection Agency (EPA) 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety. Office of Noise Abatement and Control. EPA 550/9-74-004. March. Community Noise.

Exhibit J

EXHIBIT J

SPECIAL FACTORS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

“Describe any special factors not previously covered herein, which Applicant believes to be relevant to an informed decision on its application.”

The Applicant has initiated a public / stakeholder outreach process as part of the development of the Sun Streams Gen-tie Project. This effort is being conducted in addition to the Citizen Participation Plan that was implemented for the Sun Steams Solar Facility which also included extensive outreach efforts to distribute information and solicit input from the public and interested stakeholders.

CITIZEN PARTICIPATION FOR THE SOLAR ENERGY FACILITY

Sun Streams, LLC developed and implemented a Citizen Participation Plan specifically associated with the Maricopa County Special Use Permit (SUP) process. An SUP was originally approved for the Solar Facility by the Maricopa County Board of Supervisors in 2011, allowing the development of the facility on an approximate 1,070 acres. Currently, an Amendment to this SUP is being processed by Maricopa County to allow the expanded development of the Solar Facility onto an additional 1,085 acres adjoining the currently entitled area of the site. This additional acreage includes the location of the Project Substation site. The citizen participation process for the SUP amendment process included the following activities:

- February 7, 2013 – Sent mailing notice outlining the SUP process and community meeting to be held on March 4, 2013 to interested parties and property owners within 1,320 feet of the solar facility site
- February 19, 2013 – 22 signs posted around the Project site noticing the Maricopa County process
- March 4, 2013 – Community meeting held at the Arlington Elementary School

PUBLIC / STAKEHOLDER OUTREACH PROGRAM FOR THE GEN-TIE PROJECT

One of the primary goals of the public / stakeholder outreach program for the Gen-tie Project was to identify stakeholder issues and concerns specific to the development of the Project Substation and Gen-tie Line, the subjects of this CEC Application. To complete this process, a number of efforts are being implemented.

- **Project 1-800 number:** The Gen-tie Project established and is maintaining a 1-800 number that is used to respond to questions and obtain comments from the

public. The Project phone number is 1 (844) 649-4613.

- **Photographic Simulation:** A photographic simulation using a 3-Dimensional (3D) model of the Gen-tie Project has been developed to provide stakeholders and the general public a sense of the size, scale, and setting of the Project.
- **Comment Forms:** Comment forms are being utilized at the open house public meeting to take written comments.
- **Public Comment Tracking Database:** The Applicant has created a database for documenting contacts with the public that will be maintained through construction. Contact records identify the name, contact information, topic(s) of discussion, and follow-up action needed and taken.
- **Project Website:** The Applicant has created a website to notify the public of all hearing dates and technical information regarding the Project. The website is: www.SunStreamsProject.com

All stakeholders requesting a response will be contacted to provide the requested information. A thorough record of all contacts and response actions will be provided prior to the Siting Committee hearing.

Open House

An Open House has been scheduled for April 10, 2014 at the Arlington Elementary School. This Open House will allow the public to have informal, one-on-one conversations with Project representatives and express concerns, provide input, and receive answers to their questions. Comment forms will be made available for all attendees.

Notice for the Open House was provided as follows:

- Notice of the Open House was published in the West Valley View in the April 4, 2014 edition of the bi-weekly newspaper, which serves the communities in the vicinity of the Project.
- Individual mailings providing notice of the Open House were made to interested parties and property owners. The mailing list for this notice included everyone that was part of the previous mailings associated with the Solar Facility as well as the property owners within 1,320 feet of the Gen-tie Project.

The invitations for the Open House, newspaper advertisements and mailing list have been included in **Appendix J-1**.

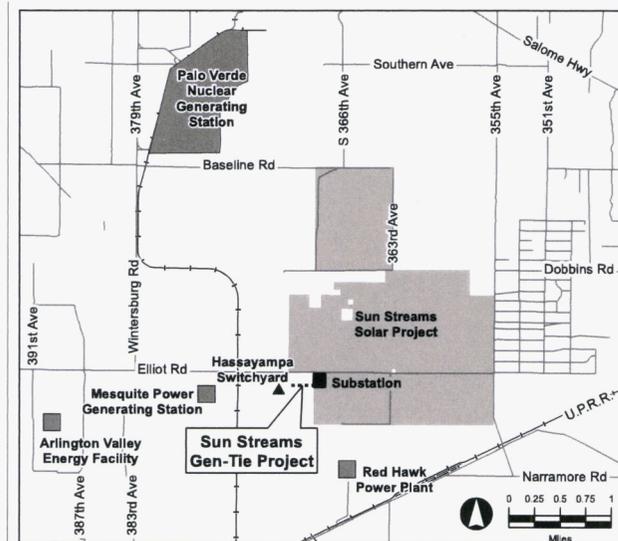
Appendix J-1 – Public Process Materials



Open House Meeting

SUN STREAMS GEN-TIE PROJECT

Sun Streams, LLC, a wholly owned subsidiary of First Solar, Inc., is proposing to construct the Sun Streams Gen-tie Project, a 34.5/ 500kV substation and 0.3-mile 500kV gen-tie line. This gen-tie project would interconnect the proposed Sun Streams Solar Project, a solar generating facility using photovoltaic (PV) technology, to the adjacent existing Hassayampa Switchyard. Sun Streams, LLC will be filing an application for a Certificate of Environmental Compatibility (CEC) to the Arizona Corporation Commission (ACC) for these interconnection facilities. The Project is located on the south side of West Elliot Road, west of the intersection with 363rd Avenue in Maricopa County. A map is provided below.



The public meeting will be held:

*April 10, 2014
5:00-7:00 p.m.
Arlington Valley Elementary School
9410 S. 355th Ave.
Arlington, Arizona 85322*

Representatives of the project will be available to provide information and address your questions and concerns. It is an Open House format and you can come anytime - RSVP is not necessary. We welcome your input and hope you can join us!

IF YOU HAVE ANY QUESTIONS, PLEASE CALL 1 (844) 649-4613

Project Coordinator
5626 S. Sailors Reef Road
Tempe, Arizona 85283

YOU ARE INVITED TO AN OPEN HOUSE

Public Notice

Sun Streams, LLC, a wholly owned subsidiary of First Solar, Inc., is proposing to construct the Sun Streams Gen-tie Project, a 34.5/ 500kV substation and 0.3-mile 500kV gen-tie line. This gen-tie project would interconnect the proposed Sun Streams Solar Project, a solar generating facility using photovoltaic (PV) technology, to the adjacent existing Hassayampa Switchyard. Sun Streams, LLC will be filing an application for a Certificate of Environmental Compatibility (CEC) to the Arizona Corporation Commission (ACC) for these interconnection facilities. The Project is located on the south side of West Elliot Road, west of the intersection with 363rd Avenue in Maricopa County.

The public meeting will be held:

April 10, 2014
5:00-7:00 p.m.

Arlington Valley Elementary
School

9410 S. 355th Ave.

Arlington, Arizona 85322

Representatives of the project will be available to provide information and address your questions and concerns. It is an Open House format and you can come anytime - RSVP is not necessary. We welcome your input and hope you can join us!

If you have any questions, please call 1(844) 649-4613

Published in the West Valley View, and the West Valley Business on April 4, 2014.

Owner	Address	City	State	Zip	APN
ARLINGTON VALLEY SOLAR HOLDINGS LLC	TWO TOWER CENTER 11TH FLOOR	EAST BRUNSWICK	NJ	8816	40143025 40143024B
J&F CONSULTING LLC/KLARA PROPERTIES LLC/ETAL	P O BOX 1355	AVONDALE	AZ	85323	40143008 40143058A 40143059 40143060 40143068A 40143074 40143012W 40143012X 40143012Y 40143012Z 40143013 40143014 40143016 40143017 40143018 40143019A
NUCLEAR VISION LLC	6807 N PEPPER TREE LN	PARADISE VALLEY	AZ	85253-3346	40143024A 40143029 40143070B 40143071B 40143082 40143085 40143087
SALT RIVER PROJECT A I & P D ETAL	PO BOX 52025	PHOENIX	AZ	85072	

Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B
ACOSTA VELIA	2728 W COLTER 2	PHOENIX	AZ	85017	40142406
AGNEW EDWARD/CAROL	20842 W ARLINGTON RD	BUCKEYE	AZ	85326	40142375
ARIZONA PUBLIC SERVICE CO/ETAL	PO BOX 53999 STATION 9282	PHOENIX	AZ	85072	40143930 40143038A
ARIZONA PUBLIC SERVICE COMPANY	PO BOX 53999 MS 9557	PHOENIX	AZ	85072	40144007C 50642037B
ARLINGTON ELEMENTARY SCHOOL DIST 47	16351 S ARLINGTON SCHOOL RD	ARLINGTON	AZ	85322	40143019B
ARMSTRONG MICHAEL L & LOUISE J	121 CANTERBURY RD	EAU CLAIRE	WI	54701	40142341
ARNETT FRED	1045 E UNIVERSITY	MESA	AZ	85203-8046	40142153
AYALA CRISTOBAL AGUILAR	18616 W YUMA RD SP17	GOODYEAR	AZ	85338	40143001A
BARSEY RAMON/HELID	600 S DOBSON RD UNIT 125	MESA	AZ	85202	40142152
BEASLEY VERONICA S	34917 W LA MIRADA ST	ARLINGTON	AZ	85322	40142011T
BEATY ALAN R/SHARON A	3758 W HILL RD	PAINTED POST	NV	14870	40142150
BELTRAMEA EPHREM JOHN/DEBRA M	PO BOX 7361	SPRINGFIELD	IL	62791	40143079
BENNETT SHARLENE ELIZABETH ETAL	4810 E TOWNER	TUCSON	AZ	85712	40143012G
BITTNER LAWRENCE C & IDELLA ETAL	4834 LANGES CORNERS RD	DENMARK	WI	54208-9122	40142370
BLINN CHRISTIAN & FLOSSIE	BOX 92	SANTA	ID	83866	40142289
BLOOMQUIST LOREN E & MARIANNE	3711 LAKEVIEW DR RT 4	NORFOLK	NE	68701	40142376
BOLIS ODEESH H/JANET K	7526 W EUGIE AVE	PEORIA	AZ	85381	40143012M
BROWN FAMILY LIMITED PARTNERSHIP THE	3920 N 3400 EAST	KIMBERLY	ID	83341	40142029L 40142029M
BRUEHL JR GARY E/BRENDA	16850 W FILLMORE ST	GOODYEAR	AZ	85338	40142173
BRUNMEIER STEPHEN J	PO BOX 130	GREEN BAY	WI	54305	40142346
BYASSEE KELLY F	401 E FAIRWAY DR	LITCHFIELD PARK	AZ	85340	40142373
CAMPO BROTHERS INVESTMENTS L L C/ETAL	6318 E SAGE DR	SCOTTSDALE	AZ	85253	40143001B 40143001C 40143001D 40143001E 40143001F 40143001G
CHAVEZ ENRIQUE/MARIA	PO BOX 483	TOLLESON	AZ	85353-0483	40143003X
CHAVEZ JUAN/BERTHA	4714 N 39TH AVE	PHOENIX	AZ	85019	40143003V
CHAVEZ MIRCA	786 N MEADOWS DR	CHANDLER	AZ	85224	40142315
CIMINO LOUIS & ANGELINE	1138 E DEL RIO DR	TEMPE	AZ	85282	40143081

Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B
CLARK HOWARD F	709 MAIN ST	RAMONA	CA	92065	50642035
CLEASBY CAROLYN/PLEMON EUGENE J	PO BOX 934	GREENEVILLE	TN	37745	40143040
COTA MANUEL F JR	6420 W ELLIS RD	LAVEEN	AZ	85339	40143946
COVARABIA JUAN NAVA	3023 W ELLIOT RD	LAVEEN	AZ	85339	40143945 40143012J
COWLEY REVOCABLE LIVING TRUST	1242 E JACKSON ST	PHOENIX	AZ	85034	40143002W 40143050 40143053 40143054 40143003N 40143003P
DIAZ JOSE ROBERTO	4846 N 113TH DR	PHOENIX	AZ	85037	40142288
DOLPHY ERNEST L	1752 NW MARKET ST G22	SEATTLE	WA	98107	40143042
DOWNS GORDON W	313 SALEM DR	MANDEVILLE	LA	70448	40143056B
DURHAM QUINCY	5219 S DYSART RD	AVONDALE	AZ	85323	40142155
EASTRIDGE CHRISTOPHER T	1883 S KERCKHOFF WAY	HANFORD	CA	93230	40142395
EK PROPERTIES LLC	35419 W PIEDMONT	ARLINGTON	AZ	85322	40142127 40142130 40142308
ESPINOZA HERLINDA/ESPINOZA MARTIN/MARTINEZ	3050 BUENA VISTA AVE	LEMON GROVE	CA	91945	40143012R
FEENEY MICHAEL TIMOTHY	PO BOX 8396	MESA	AZ	85214	40142319
FIGUEROA GEORGE J/JACOBS MIKE	4426 E EARLL DR	PHOENIX	AZ	85018	40142393
GAINES HAROLD	C-12 LOS ALMENDROS ST	CAYEY	PUERTO RICO	736	40143045
GARCIA REGINALDO G/BARAJAS PATROCINIO/BEJAF	8828 W SANNA ST	PEORIA	AZ	85345	40143003F
GARCIA SATURNINO FRANCISCO/VEGA ALMA DELIA	35344 W LODGE RD	ARLINGTON	AZ	85322	40142310
GINGRICH FRED	2860 W SHADY VIEW LN	LEHI	UT	84043	40143056A
GLEBKE RONALD C & JEAN E ETAL	4113 DAVEY COURT	EAU CLAIRE	WI	547030000	40142148
GONZALEZ LUIS	PO BOX 59514	LOS ANGELES	CA	90714	40142290
GONZALEZ RAMIRO	12147 W ROSEWOOD DR	EL MIRAGE	AZ	85335	40142174
GOODALL WALTER C/REXANNA K	200 POTOMAC CT	SKYESVILLE	MD	21784	40143067
GRAY MICHELE	PO BOX 72540	PHOENIX	AZ	85050	40142401
GRUBB JOHN S	12171 N 104TH WY	SCOTTSDALE	AZ	85259	40142029Q
GRUBB LOUIS S TR	4502 MOONLIGHT WAY	PARADISE VALLEY	AZ	85253	40142029N
GUSE ERVIN A & ISABELLE C	226 N HENNINGER	MAYVILLE	WI	53050	40142367

Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B
H & M ENTERPRISES INC	PO BOX 591	TEMPE	AZ	852800591	40142133 40143931 40143932 40143933 40143934 40143935
HALLMAN JERRY DEAN	35121 LA MIRADA DR	ARLINGTON	AZ	85322	40142112
HALLMAN SHARON D	PO BOX 90	ARLINGTON	AZ	85322	40142372
HARVEY WALTER W	35301 WW PIEDMONT RD	ARLINGTON	AZ	85322	40142134
HEISELMAN ERNESTINE L	3719 E BASELINE RD	PHOENIX	AZ	85045	40143003R
HENRY DAVID W & SYLVIA W	3817 CATHEDRAL AVE NW	WASHINGTON	DC	20016	40142403
HENSON PEGGY	35221 W MCNEIL ST	ARLINGTON	AZ	85322	40142171
HERITAGE TRUST CO TR CROSBY	1106 10TH ST	SPIRIT LAKE	IA	51360	40143044
HERNANDEZ CRISTOBAL/ELOISE D	35329 W SUNRISE DR	ARLINGTON	AZ	85322	40142366
HERNANDEZ MARY M	3533 W LA SALLE ST	PHOENIX	AZ	85041	40142113
HIXON DONALD D/ BARBARA L	9229 S 355TH AVE	ARLINGTON	AZ	85322	40142029E
HOLMES PAULINE TR	5543 N CAMINO DEL PENOSO	TUCSON	AZ	85750	40143020A 40143021A
HOUCK CLARA A	416 W MOHAWK DR	PHOENIX	AZ	85027	40142317
HOULIHAN REVOCABLE TRUST	1117 E FAIRMOUNT AVE	PHOENIX	AZ	85014	40142365
HYSLOP R G/BECKY JEAN TR/HYSLOP R G TR	15654 W CROCUS DR	SURPRISE	AZ	85379	40142029P
IRWIN DONALD JOSEPH/CHONGMIN TR	2922 N 35TH AVE STE 1	PHOENIX	AZ	85017	40142392
JB & TR INC	3516 E CAROL AVE	PHOENIX	AZ	85028	40142398
JOHNSON KENT A/PAMELA K	3529 PLANTATION RIVER DR	BOISE	ID	83703	40142156
JONES ELEANOR V TR	3324 N 47TH ST	PHOENIX	AZ	85018	40143041
JUDGE MAUREEN	35326 W PIEDMONT RD	ARLINGTON	AZ	85322	40142126
KEENE ROBERT P	PO BOX 466	SAGLE	ID	83860	40142158
KEITH DERRICK/RAMIREZ LUCILA	35344 W STEINWAY DR	ARLINGTON	AZ	85322	40142318
KELLY PATTI G	25669 W MAGNOLIA ST	BUCKEYE	AZ	85326	40142340
KH LAND LLC	318 W BEVERLY LN	PHOENIX	AZ	85023	40142176
KIRK KC A/CANDACE L	35234 W PIEDMONT RD	ARLINGTON	AZ	85322	40142124
KIRKPATRICK KEVIN/GINA	2009 S COTTON LANE	GOODYEAR	AZ	85338	40142125
KNOLL DONALD P & ELAINE M	7723 SUN COUNTRY DR	ELIZABETH	CO	80107	40142404
KOCH RONALD N ETAL	2731 50TH ST SOUTH	WISCONSIN RAPIDS	WI	54494	40142131

Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B
KOHTZ DIANNE E/MASTERS BONNIE	1621 E 1100 S	EDEN	ID	83325	40142151
KRAMER LEO W & BERTHA M	PO BOX 1020	EL CAJON	CA	92022	40142172
KRYSIAK CASIMIR A & ELIZABETH L	1507 E 7TH ST	SUPERIOR	WI	54880	40142132
LAFFOON JAMES F JR/LORETTA J	31601 S OLD US 80	BUCKEYE	AZ	85326	40142128
LANDERS MARK	35429 W STEINWAY DR	ARLINGTON	AZ	85322	40142342
LEWIS ANITA	35329 W STEINWAY DR	TONOPAH	AZ	85322	40142338
LINSENMEYER ERNEST M	3719 E BASELINE RD	PHOENIX	AZ	85045	40143003Q 40143003S
LINSENMEYER MIYA A/CUSTOD OF JACKSON A MERT	3719 E BASELINE RD	PHOENIX	AZ	85045	40143003T
LIO ANTONIO CARMELLO	478 BROWNRIDGE DR	THORNHILL	ONTARIO CANADA		40142337
LOPEZ GERARDO	2432 W PEORIA AVE STE 1114	PHOENIX	AZ	85029	40143950 40143951
LUCAS JOHN L/MONICK JONI	PO BOX 75	ARLINGTON	AZ	85322	40142321
MACEDO TOMAS	2913 S 162ND LN	GOODYEAR	AZ	85338	40143068B
MARTIN REV ROLAND & ARLEE	6118 SO GALENA COURT	ENGLEWOOD	CO	80111	40142396 40142402
MATTHYS RUSSELL B	1828-12 1/2 AVE	BARRON	WI	54812	40142344
MCCOY BARBARA E	9234 S 349TH AVE	ARLINGTON	AZ	85322	40142157 40142343
MCNAMARA JOHN W	3472 PERSHING RD #2	COLUMBUS	NE	686010000	40143078
MCNEE ROLAND	RR 1	MECHANICSVILLE	IA	52306	40143072
MEYER MELVIN G & JANICE J	8410 S 25TH AVE	OMAHA	NB	68147	40143011D
MGW LLC	7813 W CAMINO DE ORO	PEORIA	AZ	85383	40142377
MINNESOTA TITLE CO TR 1689	3200 N CENTRAL AVE	PHOENIX	AZ	850122400	40143070A 40143071A 40143083 40143084 40143086
MOBERG HASSE/NICOLE	7342 HUCKLEBERRY RD	OLYMPIA	WA	98502	40143057D
NAHAS ROULA	610 E BELL RD #2286	PHOENIX	AZ	85023	40142397
NELWAY LIMITED PARTNERSHIP	919 12TH PL 1	PRESCOTT	AZ	86301	40143023B
NEW CENTURY INC	3283 N 162ND DR	GOODYEAR	AZ	85395	40143012B
NORCO SYSTEMS INC	17029 E ENTERPRISE DR NO 3	FOUNTAIN HILLS	AZ	85268	40142336

Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B
ODER GEORGEANNA JEAN	11319 EASLEY DR	LEES SUMMIT	MO	64086	40143073
OGSBURY INVESTMENTS LLC	PO BOX 275	COTTAGE GROVE	OR	97424	40143012C
OKLA LAND DEVELOPMENT LLC	98 E EVELYN LN	TEMPE	AZ	85284	40142349
PAUL W DORAN FAMILY REV TRUST THE ETAL	1950 ARROYA VISTA	COTTONWOOD	AZ	86326	40143043
PEDO PROPERTIES LLC	6730 E MCDOWELL RD STE 116	SCOTTSDALE	AZ	85257	40143056C
PENA MARIA C/RAUL M/JORGE	6727 W TURQUOISE AVE	PEORIA	AZ	85345	40142364
PHELPS RANDEL E/LYNN N	RT 1 BOX 1279	HOMEDALE	ID	83628	40142293
PHOENIX AIRCRAFT CERTIFICATION SERVICES	4208 W EVANS DR	PHOENIX	AZ	85053	40142347
PRI ASSET MANAGEMENT INC	10445 N ORACLE RD STE 141	ORO VALLEY	AZ	85737	40143011V
PRISELAC FRANK W/ANITA T	13501 E EXPOSITION AVE	AURORA	CO	80012	40142311
PUCK RONALD E/LAVERNE E ETAL	3317 ARLINGTON CIR	DAVENPORT	IA	528031300	40142175
REDDINGTON KATHY	12837 W WHITTON AVE	AVONDALE	AZ	85323	40142320
REYNOLDS SUSAN	30843 W PORTLAND ST	BUCKEYE	AZ	85396	40142339
RIDGECREST DEVELOPMENT III LLC	PO BOX 61427	VANCOUVER	WA	98666	40143003U 40143003W
RILEY OPAL J	8154 W PALMAIRE AVE	GLENDALE	AZ	85303	40143011G
RODRIGUEZ JAVIER/LYDIA	7419 N 185TH AVE	WADDELL	AZ	85355	40143011H 40143011L
ROGERS MARK & BONNIE	567 WILCOX AVE	FAIRBANKS	AK	997093626	40142312
RUETTIMZNN HEINRICH	MUSEGGST 48 PO BOX 5340	LUZERN	SWITZERLAND		40142368
RUIZ ENRIQUE M/MARGARET R TR	35019 W SOUTH MOUNTAIN AVE	TONOPAH	AZ	85354	40142316
RUZMIR MARCELA A	5804 W DESPERADO WY	PHOENIX	AZ	85083	40142405
RYAN ELMER W W/WRONKOSKI DORIS M J	4822 W FRIER DR	GLENDALE	AZ	853011531	40143069
SALT RIVER PROJECT A I & P D ETAL	PO BOX 52025	PHOENIX	AZ	85072	40143024A 40143029 40143070B 40143071B 40143082 40143085 40143087
SALVATORE GATTO PARTNERS LP	PO BOX 33184	PHOENIX	AZ	85067	40143057C
SCHIEGG JOSEPH	3469 BAY HIGHLANDS DR	GREEN BAY	WI	543117319	40142369
SCHUTZ ELLEN M	73701 RD NO 419	ELWOOD	NE	68937	40143051
SKALAK HOLDINGS LLLP/STINSON JOSHUA T	1619 E EL CAMINO DR	PHOENIX	AZ	85020	40142400

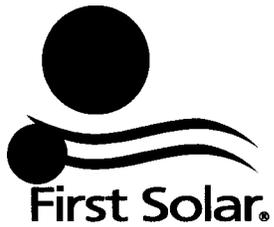
Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B
SKORIK STEPHANIE M	1285 CREEKSIDE LN	GRAFTON	WI	53024	40142291
SMITH ALBERT L	12876 E SORREL LN	SCOTTSDALE	AZ	85259	40142154
SMT INVESTORS PARTNERSHIP	1242 E JACKSON ST	PHOENIX	AZ	85034	50642033
SOUTHERN PACIFIC CO /OPERATIVE/	1400 DOUGLAS ST STOP 1640	OMAHA	NE	68179	40142972
STONE VICTOR/NINA	1254 E MARCONI AVE	PHOENIX	AZ	85022	40143052
SUN STREAMS LLC	421 SW 6TH AVE STE 1000	PORTLAND	OR	97204	40143011E 40143011J 40143011M 40143011N 40143011P 40143011Q 40143011R 40143011S 40143011X 40143011Z
SUN STREAMS LLC	135 MAIN ST 6TH FLOOR	SAN FRANCISCO	CA	94105	
SUNSHINE LAND & CATTLE CORP	101 E MOON VALLEY DR	PHOENIX	AZ	85022	40142149
TARELO GONZALO/ABIGAIL	1205 S 117TH DR	AVONDALE	AZ	85323	40143055A 40143011Y 40143058C 40143058D 40143080
TATTIE LAND LP	893 W PALO BREA DR	LITCHFIELD PARK	AZ	85340	
TAVIZON JOSE/SMITH SARAH/TAVIZON RICARDO	15405 W PARADISE LN	SURPRISE	AZ	85374	40143012E
TEKLE FAMILY TRUST	920 E WALTANN LN	PHOENIX	AZ	85022	40142147
TOMLIN CORDELL R	9417 N 87TH ST	SCOTTSDALE	AZ	85258	40142313 40142348
TOMLIN CORDELL R/JOAN M	PO BOX 8824	SCOTTSDALE	AZ	85252	40142394
UNITED REAL ESTATE ENTERPRISES LLC	4006 LONDON BRIDGE RD NO 57	LAKE HAVASU CITY	AZ	86404	40143012N
VERMA KATARIA 363/DOBBINS 160 LLC	3001 W INDIAN SCHOOL RD NO 14	PHOENIX	AZ	85017	40143003A
VILLAGOMEZ JOSE	2544 W BROADWAY RD	PHOENIX	AZ	85041	40143012L
VILLAGOMEZ NORA HILDA	2830 W SUNLAND	PHOENIX	AZ	85041	40143011F
VOLPICELLI VIRGIL E/THERESA C	9 MONMOUTH ST	SOMERVILLE	MA	21430000	40142309
WALDECK SHERREE E	35435 W PIEDMONT RD	ARLINGTON	AZ	85322	40142129
WHITE SHAWN MORGAN	3120 LOVE LN	KINGMAN	AZ	86401	40143012Q
WILLIAMS RAYMOND RUSSELL	1802 N 200TH AVE	BUCKEYE	AZ	85326	40143011T

Owner	Address	City	State	Zip	APN
110 HOLDINGS LLC	6929 N HAYDEN RD NO C4-235	SCOTTSDALE	AZ	85250	40142399 40142287 40142292 40142314 40142345 40142371 40142374 40143057B

Legend
New owner

Interested Party	Address	City	State	Zip
ARIZONA STATE LAND DEPARTMENT ATTN: RAYMOND MOORE, ADMINISTRATOR	1616 WEST ADAMS STREET	PHOENIX	AZ	85007
MARICOPA COUNTY EMERGENCY MANAGEMENT DEPARTMENT MARICOPA COUNTY PLANNING AND DEVELOPMENT DEPARTMENT	5630 E. MCDOWELL ROAD	PHOENIX	AZ	85008
ATTN: ROBERT H. KUHFUSS, AICP PROGRAM MANAGER - SOLAR DEVELOPMENT	501 N. 44TH ST., STE. 200	PHOENIX	AZ	85008
SALT RIVER PROJECT A I & P D ETAL	PO BOX 52025	PHOENIX	AZ	85072
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	2801 W. DURANGO STREET	PHOENIX	AZ	85009
TONOPAH VALLEY ASSOCIATION ATTN: DORIS HEISLER, PROJECTS DIRECTOR	3002 N. 423RD AVENUE	TONOPAH	AZ	85354
TONOPAH VALLEY COMMUNITY COUNCIL ATTN: RICK MOREAU, PRESIDENT	P.O. BOX 117	TONOPAH	AZ	85354

Owner	Address	City	State	Zip
ATLAS RESIDENTIAL LLC	6250 E CHENEY DR	PARADISE VALLEY	AZ	85253
ESTRADA JESUS/MARIBEL	11321 W ORCHID LN	PEORIA	AZ	85345
JANDA LAND HOLDINGS LLC	101 E MOON VALLEY DR	PHOENIX	AZ	85022
KOLONIA LLC	5025 N CENTRAL AVE STE 6	PHOENIX	AZ	85012
MULGADO JOAQUIN/JOSEFINA	7113 W VIRGINIA AVE	PHOENIX	AZ	85035
MULGADO JOAQUIN/JOSEFINA	9503 W LAS PALMARITAS DR	PEORIA	AZ	85345
R3T HOLDINGS LLC	6807 N PEPPER TREE LN	PARADISE VALLEY	AZ	85253
SAENZ ANDRES/QUINTERO DOLORES MINERVA	8612 S 14TH PL	PHOENIX	AZ	85042
SIBILIA ALBERT V/MINNIE TR	508 S 51ST STREET	OMAHA	NE	68106
UNION BANK & TRUST CO	P O BOX 64142	ST PAUL	MN	55164
WYATT FAMILY TRUST	5207 N 33RD ST	PHOENIX	AZ	85018



COMMENT FORM

Sun Streams Gen-tie Project

Open House

April 10, 2014

5:00-7:00 p.m.

Arlington Valley Elementary School

9410 S. 355th Ave.

Arlington, Arizona 85322

Thank you for your interest in the Sun Streams Gen-tie Project. Please complete this form and provide any comments or questions you have about the Project. Written comments may be submitted to a Project representative, or mailed to the address on the back of this sheet. For more information about the project, please call **1-844 649-4613**.

Please Print

E-mail address

Name

Organization

Street Address

Daytime Phone No. (*optional*)

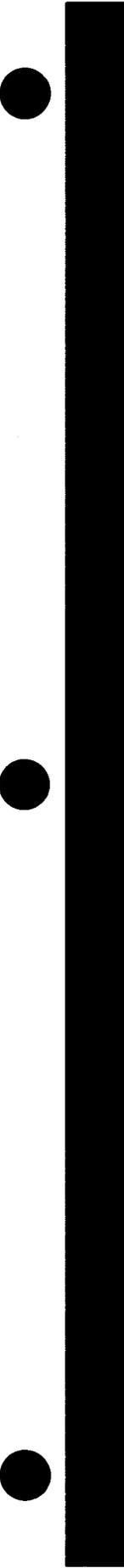
City

State

Zip Code

Please provide any questions or comments about the project?

Thank you for your time and interest.



WELCOME

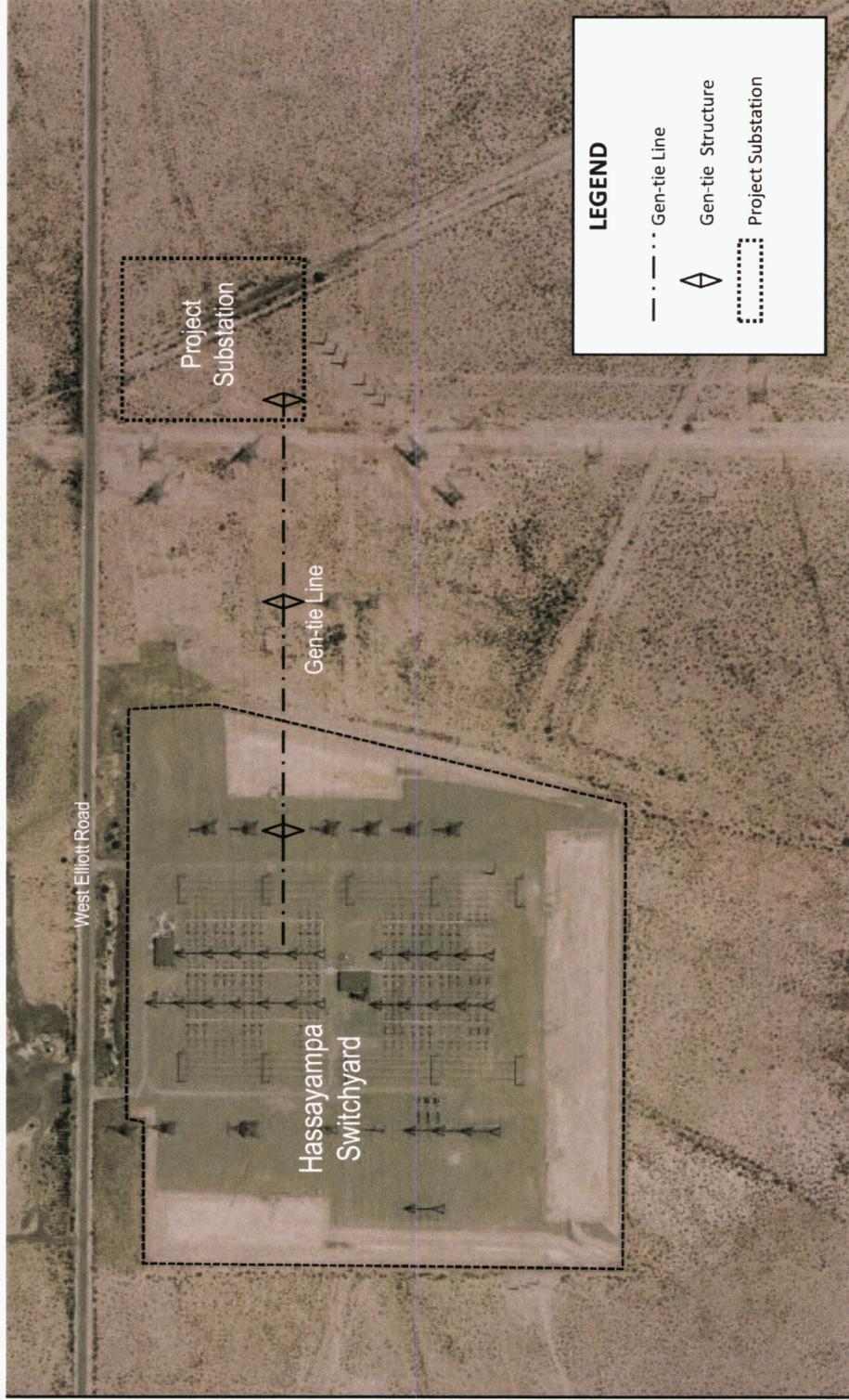
SUN STREAMS GEN-TIE PROJECT



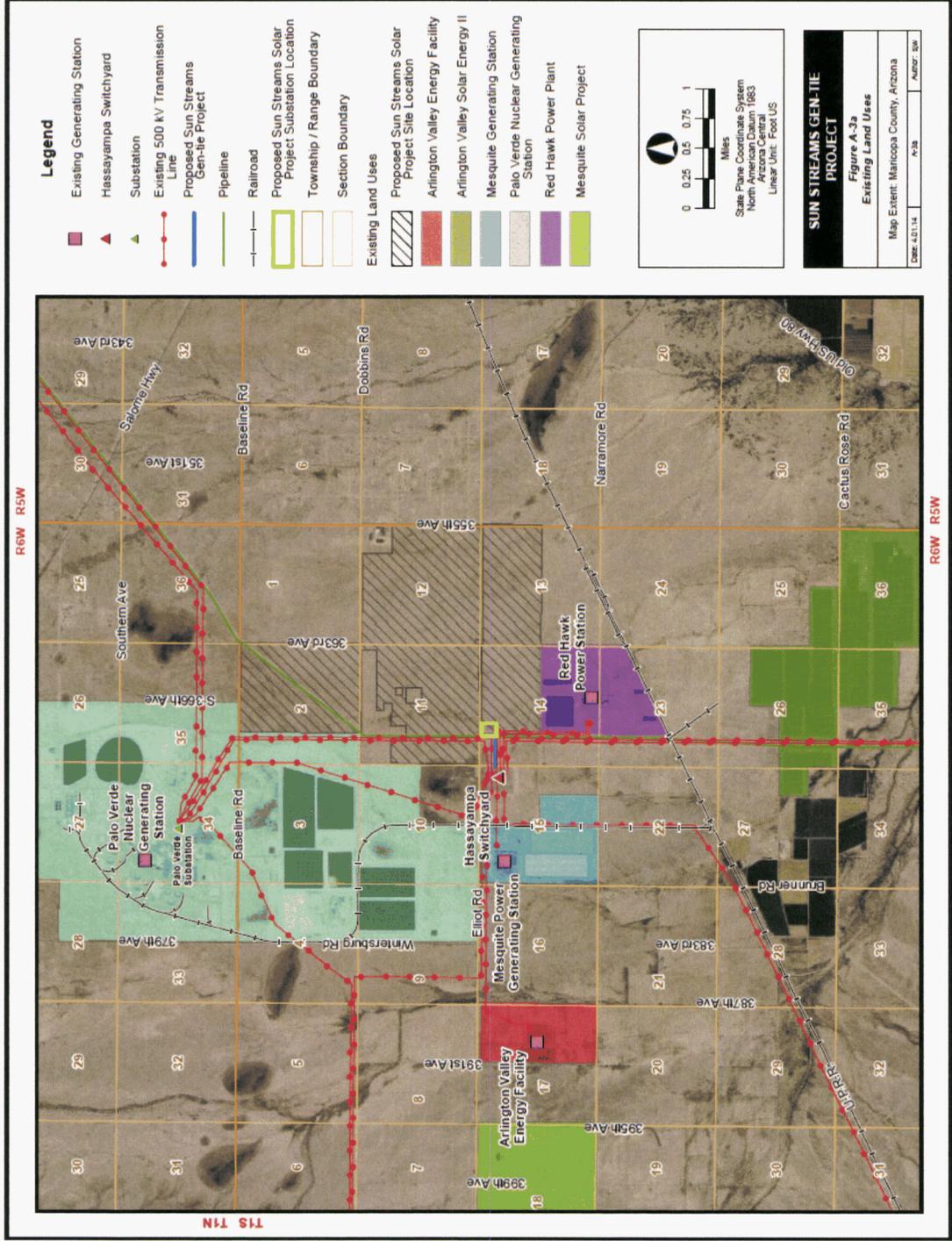
Project Description

- Sun Streams, LLC is proposing to construct the Sun Streams Gen-tie Project
- 3.45/500kV substation and 0.3-mile 500kV gen-tie line
- Gen-tie project would interconnect the proposed Sun Streams PV Solar Project to the adjacent existing Hassayampa Switchyard

Project Substation and Gen-Tie



Surrounding Land Use



Public Involvement

- Open House
- Arizona Corporation Commission (ACC) Process
 - Filed Certificate of Environmental Compatibility (CEC) Application on April 4, 2014
 - Siting Committee Hearing Scheduled for May 12, 2014
- Opportunity to Participate in CEC Process
 - Provide Public Comment at the Hearing, or
 - File a limited appearance written statement, or
 - File as formal intervenor party



Existing View and Visual Simulation of the Sun Streams Gen-tie Project



Existing View of the Sun Streams Gen-tie Location
Looking West-Southwest from West Elliot Road



Visual Simulation of the Sun Streams Gen-tie Project
Looking West-Southwest from West Elliot Road

PLEASE PROVIDE COMMENTS

We would like to hear from you!

Please fill out comment forms
or call 1 (844) 649-4613

